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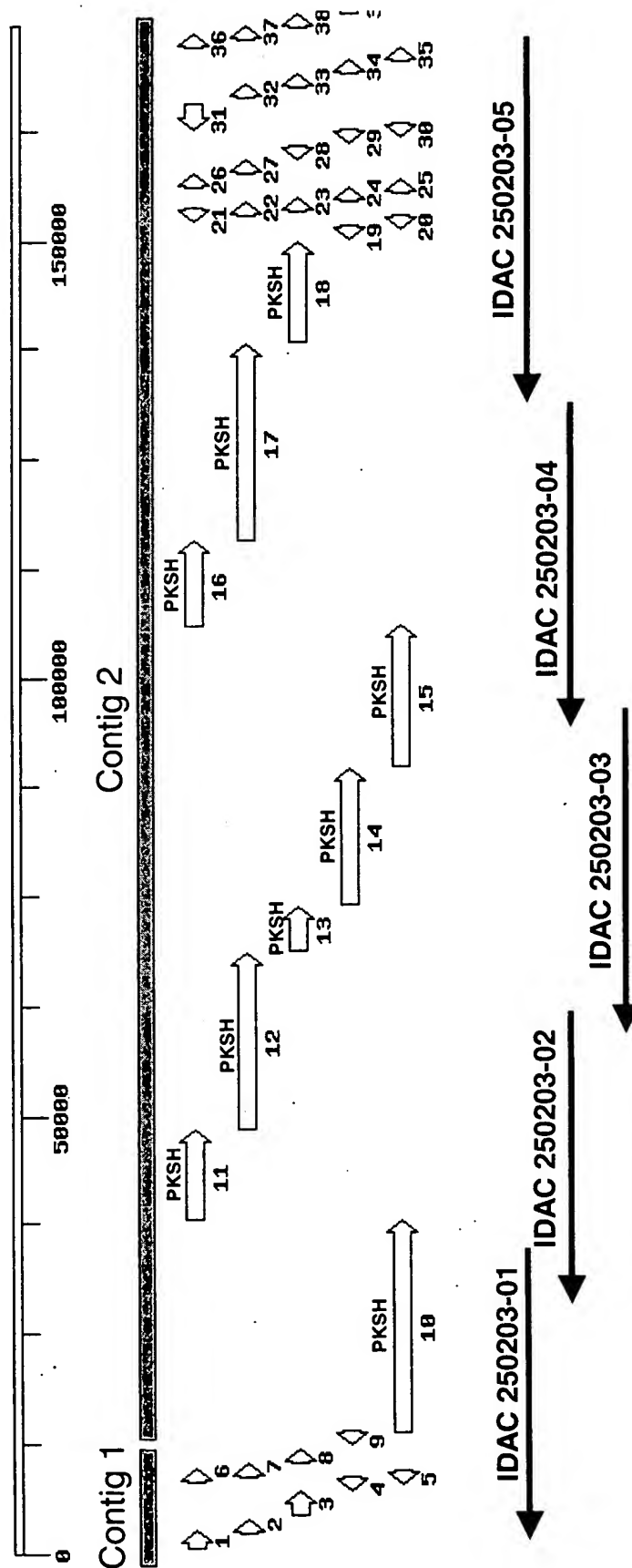
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Figure 1

# Gene Cluster for Production of Compound 2(a)



## Figure 2a

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ORF10_pKS01      PIAIVGIGCHFPGGVQSP EALWNLVETGTD A ISAFPTGRGWLDLALYDPPDPDRAGTSYAR
ORF10_pKS02      PIVIVSMSCRFPGGVRT PEDLWQLLADGTD T VAAFPADRGWLDLGLYSADPERSGTSYTR
ORF10_pKS03      PIAIVSMSCRFPGGVRT PEDLWRLVLVDGT DAVGAFPADRGWLDLRLYSPDDPDQGTSYTR
ORF10_pKS04      PIVIVMGCRYPGGVRS PEDLWQLVATGGD G ITGFPSDRGWNVEALYHPDDPDHAGTSYTR
ORF10_pKS05      PIAIVAMSCRFPGGVRT PEDLWRLLLSTGG D AIGEFPADRGWDL SRLYSPDDPKDQGTFFYAR
ORF11_pKS01      PIAIVAMSCRFPNGVGS PEDLWRLVDEGG D AITGFPADRGWDI ES LADPDPDRKGTFFYN
ORF11_pKS02      PIAIVAMSCRYPGGVRT PEELWRLVLVET G GDAIAGLPGNRGWDITDALH-- --ADEGRTFA-
ORF12_pKS01      PIAIVGMSCRFPGGVSS PEDLWRLVESGG D AISGFVFNRGWDI ES LYDPPDPDHEGTTYAR
ORF12_pKS02      PIAIVAMSCRFPGGIAS PEDLWQLLV TGRDGI TGF PADRGWDLDSL YSDDPDREGTSYAR
ORF12_pKS03      PIAIVSMSCRFPGGVRT PEDLWELLSTGG D AISDLPLDRGWDI DALYADPSTQGTSYAR
ORF12_pKS04      PIAIVAMSCRFPGGVRT PEDLWQLLATGR D AIGEF PEDRGWD AEAALFGP-QFEQDAPYAR
ORF13_pKS01      PIAITAMSCRFPGGVRS PEELWELLRTGG D ALTAFPADRGWDL DNLF SDDPDHNTSVTR
ORF14_pKS01      PIAIVMGCRYPGGVTS PEELWQLVVDGG D AISGF PADRGWDMETVYHPDPEHPGTSYAN
ORF14_pKS02      PIAIVAMSCRFPGGVQSP EDLWQLLSTGR D AISGFPDRGWLDLGLYDPEAGENTSYYV
ORF14_pKS03      PIAIVAMSCRYPGDVRT PEDLWQLLTAGAD G ITRLPENRGWDT EGLYDPPDESQGTSYAR
ORF15_pKS01      PIAVVAMSCRYPGGID TPEKLWDLVAHGR D AVSAYPTDRGWDAEVLFPDPPETGIEAYEQ
ORF15_pKS02      PIAIVAMSCRYPGGVTT PEELWQLLAGGG D AISGF PADRGWDVESLYDPPDPHPGTSYTR
ORF15_pKS03      PIAIVGLGCRYPGGVES PDDLWRLVLVLEGR D AITEFPEDRGWDVLDALFDADPDQQGTSYAR
ORF16_pKS01      PIAIVAMSCRYPGDVRT PEDLWRLVLENGD D AVSGFPVDRGW DVEALYDALDPPDSGSSYVS
ORF16_pKS02      PIAIVAMSCRFPGGVRN PEELWQLLTSEGD G LSQFPLDRGWDV DALYDPPNPDAGQTSYTR
ORF17_pKS01      PIAIVGMSCRFPGGIES PEGLWDLVAGGR D AITDFPTDRGWDI ES LYDADDPDQGTSYTR
ORF17_pKS02      PIAIVGMSCRYPGGVTT PEELWQLVAGSV D AISPFPTRGWNLDALYADPGRAGTSYTR
ORF17_pKS03      PIAIVAMSCRFPGDVRT PEDLWELLAEGR D GISDLPPDRGW DTEALYDPPDPSGTSYAR
ORF17_pKS04      PIAIVGMSCRYPGGVET PEDLWRLVVGGG D AISEFPQGRGW DLES LYDPPDPDGKGTSYTR
ORF18_pKS01      PIAIVGMSCRYPGDVES PEDLWRLVSEET D AISPFPTRGWD MGRLFDADPDGRGTSYVQ
ORF18_pKS02      PIAIVAMSCRFPGGVRS PEDLWGLVL DGRDAISDMPDDR GWDVEGLFPDPPDRPGTSYSR

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ORF10\_pKS01 EGGFLHDADAFDAFFGISPREALAMPDQQRLLLEASWEAFDRAGVDPAAALRGQQVGVFV  
ORF10\_pKS02 EGGFLYDAADFADFFGISPREALAMPDQQRLLLETAWETFERAGIDPASLRGSQAGVFV  
ORF10\_pKS03 EGGFFDGAADFDPGFFGISPREALAMPDQQRLLLETSWEAIFERAGIDPSSLRGSQAGVFV  
ORF10\_pKS04 EGGFLHDAADFDPGFFGISPREALAMPDQQRLLLETSWEAFERAGIDPATLGRSRTGVFA  
ORF10\_pKS05 AGGFLYDAADFADFFGISPREALAMPDQQRLLLETSWEAFERAGIDPSSLRGSQAGVFV  
ORF11\_pKS01 GGGFLDGATAPDFGFFGISPREALAMPDQQRQLLETSWEVFERAGIDPAAVRGSRTGVVY  
ORF11\_pKS02 -GGFLYDADSFDADFGISPREALAMPDQQRLLLETSWEAIFERAGIDPSSLRGSRAQVFV  
ORF12\_pKS01 DGGFLHEAADFDPAFFGISPREALAMPDQQRLLLETTWVEVFERAGIDPASLRGSRAQVFV  
ORF12\_pKS02 EGGFLHEAAEFDASFSGISPREALAMPDQQRLLLETTWETFERAGIDPTSLRGSRTGVFV  
ORF12\_pKS03 AGGFLYDAADFADFFGISPREALAMPDQQRLLLETSWEAFERAGIDPETLRGSQAGVFV  
ORF12\_pKS04 EGGFLYDVADFDPAGFGISPREALAMPDQQRLLLETSWEAFERAGIDPLSVRGSQAGVFV  
ORF13\_pKS01 EGGFLGEASSFDAFFGISPREAMAMPDQQRLLLETSWEAFERAGIDPQALRGSQSQGVFV  
ORF14\_pKS01 QGGFVRDFARFDP SLFGISPREALAMPDQQRLLLETSWEAFERAGIDPTSMRGKQVGVFV  
ORF14\_pKS02 EGGFLAGATEFDPAFFGISPREALAMPDQQRLLLETSWEAFERAGIDPATVRGEIQIGVF  
ORF14\_pKS03 DGGFLHDAAEFDASFSGISPREALAMPDQQRLLLETTWVEVFERAGIAPS AVRGSRTGVFA  
ORF15\_pKS01 VGGFLHDAADFDPAFFGISPREALAMPDQQRLLLETSWEAFERAGIDPATLGRSRTGVFA  
ORF15\_pKS02 HGGFLRDAAAFDPTFFGISPREAVGTDPQQRLLLETTWEAFERAGIDPATVRGSRTGVFA  
ORF15\_pKS03 EGGFVRDAGHFDPAFFGISPREAVAMPDQQRLLLETSWEAFERAGIDPAALRGSRTGVFA  
ORF16\_pKS01 EGGFLYDAASFDPAFFGISPREALAMPDQQRLLLEASWEAFERAGIDPSSVRGSRTAVFA  
ORF16\_pKS02 EGGFLSDAAAFDSSFFGISPREALAMPDQQRLLLETSWEAFERAGIDPQT LRGSQSQGVFV  
ORF17\_pKS01 EGGFLDGVGKFDDASFSGISPRETLGMDPQQRLLLETSWEAFERAGIDAATLRGSKAGVFI  
ORF17\_pKS02 EGGFLHDAADFDPDFGINPREALAMPDQHRLLETSWEAFEQAGIAPSSMRGSRTGVFA  
ORF17\_pKS03 EGGFFYDAHFFDPAFFGINPREALAMPDQQRLLLETSWEAFERAGIDPTGLRGKQVGVFV  
ORF17\_pKS04 SGGFLHDAGRFPDPAFFGISPREAVAMPDQQRLLLETSWEAFERAGIDPASMRGSRTGVFA  
ORF18\_pKS01 EGGFLHSANRFDPAFFGISPREAVAMPDQQRLLLETSWEAFERAGIDPTSLRGSRTGVFA  
ORF18\_pKS02 AGGFLHDAHFFDPTFFGISPREALATDPQQRLLLETSWEAFERAGIDPATVRGSRTGVFA

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# Figure 2b

ORF10_pKS01	GAETQEYGPRLQ-----DATDGFEGYLVGTGNAASVASGRIAYTFGFEGPTVTVDTACSS
ORF10_pKS02	GTNGQDYLSLVTREGDG---LDGLEGHVGTGNAASVVSGRLSYVFGLEGPAITVDTACSS
ORF10_pKS03	GTNGQDYLSLITRESE-----GLEGHLGTGNAGSVMSGRVSYVFGLEGPAVTVDACSS
ORF10_pKS04	GVMYHDYVTGIGDGSASVELPEGVEGYLGTGNAGSIASGRIAYTFGLEGPAVTVDACSS
ORF10_pKS05	GTNGQDYGAMLQTIPTD-----GIEGFLGTGNAASVVSGRLSYAFGLEGPAVTVDACSA
ORF11_pKS01	GAGAMGYGADLKEA-----PEGLEGLLLTGGATSVLSGRVSYVFGLEGPAATVDTACSS
ORF11_pKS02	GAAYSGYDAQLEQSG-----VDGVLGHVMTGNAGSVMSGRVSYALGLEGPAVTVDACSS
ORF12_pKS01	GASANAYGAGSHDL-----PDGVEGHLLTGTASSVLSGRLAYVFGLEGPAATIDTACSS
ORF12_pKS02	GSNAQDYQLWLNDAD-----GLEGHLGTGNAASVVSGRLSYTFGLEGPAVTVDACSS
ORF12_pKS03	GTNGQDYLSVLLLEEPE-----GLEGHLGTGNAASVVSGRLSYVFGLEGPAVTVDACSS
ORF12_pKS04	GTNGQDYLSVLNSAD-----GGDGMSTGNSASVVSGRLSYVFGLEGPAVTVDACSA
ORF13_pKS01	GINGSDYLTPLLEAAE-----DYAGHLGTGNASSVMSGRLSYTFGLEGPAVTVDACSA
ORF14_pKS01	GTSNHDYLSALLSS-----SENVEGYLGTGNAASVASGRLSYTFGLEGPAVTVDACSS
ORF14_pKS02	GTNGQDYLNVLIAAPD-----GVEGFLGTGNAASVVSGRVSYVFGLEGPAVTVDACSS
ORF14_pKS03	GVMYHDYGARLH-----AVPDGVEGYLGTGSSSSIVSGRVAYTFGLEGPAVTVDACSS
ORF15_pKS01	GLMYHDYAARLF-----SVPEEIEGFLNGSSSGSIASGRIAYTLGLEGPAVTVDACSS
ORF15_pKS02	GVMYHDYAALLE-----GSKDGDGSLGSGSTGSIASGRVSYTFGLEGPAVTVDACSS
ORF15_pKS03	GVMYHDYASRLT-----ALPEGVEGFLGTGNAASVISGRLSYAFGLEGPAITVDACSS
ORF16_pKS01	GVMYHDYTARLD-----SVPEGVEGFLGTGSSSGSIASGRVAYTFGLEGPAVTVDACSS
ORF16_pKS02	GTNGSDYSNLVRAGAD-----GLEGHLATGNAGSVVSGRLSYTFGLEGPAVTVDACSA
ORF17_pKS01	GTNGQDYPELLREVPK-----GVEGYLLTGNAAASVVSGRISYTFGLEGPAVTVDACSA
ORF17_pKS02	GVMYHDYLTRLP-----AVPEGLEGYLTGTAGSVASGRISYTFGLEGPAVTVDACSS
ORF17_pKS03	GQMHNDYVSRLN-----TVPEGVEGYLGTGSSSSIASGRVSYTFDFEGPAVTVDACSS
ORF17_pKS04	GIMYHDYATRIT-----SVPDGEVEGYLGTGNSGSIASGRVSYAFGLEGPAVTVDACSS
ORF18_pKS01	GVMYHDYASRLR-----AVPEEVEGYLGTGSSSSIASGRVSYTFGLEGPAITVDACSS
ORF18_pKS02	GVMYNDYGTLLH-----RAPEGLEGYMGTTSSSGSVASGRVSYTFGLEGPAVTVDACSS
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ORF10_pKS01	SLAALHLAVQALRTGECSLALAGGVAVMASPGSFVSFSRQRLAPDGRCKPFAAADGTA
ORF10_pKS02	SLVALHLAVQALRQECTLALAGGVTVMSTPDAFVDFSRQRLAEDGRIKAFASADGTG
ORF10_pKS03	SLVALHWAIQALRQECESMALAGGVTVMSTPENFVDFSRQRLAEDGRIKAFASADGTG
ORF10_pKS04	SLVALHWAIQALRSPECTMALAGGVAVMATPETFVDFSRQRLSADGRCKSFASADGTG
ORF10_pKS05	SLVALHWAVQALRSPECTSLALAGGVTVMSSPGAYIDFSRQRLAEDGRIKAFASADGTG
ORF11_pKS01	SLVALHLATQALRQRECSLALVGGVCVMPSPDVFEFSRQRLSPDGRCKSFASADGTG
ORF11_pKS02	SLVALHWAIQALRNCECSLALAGGVTVMSTPGTFSEFSQOQGLSPDGRCKAFASADGTG
ORF12_pKS01	SSVALHMAVQALRQECESLALAAGVTVLAGPDVFEFSRQRLSPDGRCKSFASADGTG
ORF12_pKS02	SLVTLHLAAQALRRGECESMALAGAVTIMSTPGAFTEFSRQRLAEDGRIKAFASADGTS
ORF12_pKS03	SLVALHWAIQALRNCECSLALAGGVTVMSTPGTFIEFSRQRLAEDGRIKAFASADGTG
ORF12_pKS04	SLVALHLAVQALRNCECSLALAGGVTVMSTPGAFAEFSRQRLAEDGRIKAFASADGTG
ORF13_pKS01	SLVALHLAVQALRAGECSLAVAGGVHVMSTPGLFVEFSKQRLSTDGRCKAFAAGADGFG
ORF14_pKS01	SSVALHLAVQALRNCECSLALAGGATLMSAPGTFIDYSKQRLATDGRCKAFSPDADGFS
ORF14_pKS02	SLVALHWAIQALRQECTMALAGGVTVMSTPASFIIDFSRQRLAEDGRIKAFASADGTG
ORF14_pKS03	SLVALHLAAQALRNCECSLALAGGVTVMFTPGTFIEFSRQRLAEDGRCKSFASADGTG
ORF15_pKS01	SLVAVHLAAQALRNCECTLALAGGVTVMSTPGTFTEFSRQRLAEDGRCKSFASADGTG
ORF15_pKS02	SLVALHMAIQALRTGECESMALAGGVTVMATPGTFIGFSRQRLSADGRCKAFSADADGTG
ORF15_pKS03	SLVALHLAVQALRNCECSLALAGGVTVMATPAAFVEFSRQRLAEDGRCKAFSADADGTG
ORF16_pKS01	SLVTLHLAVQALRAGECSMALAGGVTVMATPATFTEFSRQRLAPDGRCKPFAAADGTG
ORF16_pKS02	SLVALHLAVQALRSPECTMALAGGVTVMSTPGTFIEFSRQRLSTDGRCKAFSSADADGFS
ORF17_pKS01	SLVALHLAVQALRNDECSLALAGGVTVMSSPRAFVQFSRQRLAPDGRCKPFADADGTG
ORF17_pKS02	SLVALHLAAQALRNCECSMALAGGVTVMSTPDTFIDFSRQRLSGNRCCKSFADADGTG
ORF17_pKS03	SLVALHLAAQALRNCECTLALAGGVTIITPDVFTFEFSRQRLASDGRCKPFAEADGTA
ORF17_pKS04	SLVALHWAIQALRNCECTMALAGGVTVMSTPGTFTEFSRQRLAEDGRIKSFASADGTS
ORF18_pKS01	SLVTLHLAMQALRKGECSLALAGGVTVMATPGTFTEFSRQRLSFDGRCKSFADSADGTG
ORF18_pKS02	SLVTLHLAVQALRNCECDLALAGGVTVMATPGTFVAFSRQRLASDGRCKPFAAADGTA
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ORF10\_pKS01 WGEGVGMLLVERLS DARAKGHRILAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALANA  
ORF10\_pKS02 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALAGA  
ORF10\_pKS03 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRREALASA  
ORF10\_pKS04 WAEGAGMLLVERLS DAERNGHVPLAVVRGSAINQDGASNGLTAPNGPSQQRVIRREALASA  
ORF10\_pKS05 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALANA  
ORF11\_pKS01 WSEGVGULLVERLS DARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPAQQRVIRQALENA  
ORF11\_pKS02 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRRAALASA  
ORF12\_pKS01 WSEGAGVLLVERLS DARRNGHHILAVVRGSAVNQDGASNGLTAPNGPAQQKVIRQALES  
ORF12\_pKS02 WSEGVGLLLVERLS DARRNGHPVLAVVRGTAVNQDGASNGLTAPNGPSQQRVIRREALADA  
ORF12\_pKS03 WGEGVGMLLVERLS DAERNGHVPLAIVRGSAINQDGASNGLTAPNGPSQQRVIRRAALASA  
ORF12\_pKS04 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRRAALASA  
ORF13\_pKS01 PAEGVGULLLERLS DARKNGRPVLAVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALANA  
ORF14\_pKS01 LAEGVGILLVERLS DARRKGHPVLAVVRGTAVNQDGASNGLTAPNGPSQQRVIRIQLALSNA  
ORF14\_pKS02 WGEGVGILLVERLS DAQRNKHVPLAIVRGSAINQDGASNGLTAPNGPSQQRVIRQALASG  
ORF14\_pKS03 WGEAGMLLLERLS DARRNGHQVLAIVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALANA  
ORF15\_pKS01 WGEAGAMLVLERLS EARRNGHPVLAVVRGSAVNQDGASSGLTAPNGPSQQRVIRQALAGA  
ORF15\_pKS02 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRRAALASA  
ORF15\_pKS03 WSEGAGVLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALASA  
ORF16\_pKS01 WGEGVGMLLVERLS DAQRNHPILAVVRGSAINQDGASNGLTAPNGPSQQRVIRHQUALTNA  
ORF16\_pKS02 PAEGVGULLVERLS DARRNGHPILAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALANA  
ORF17\_pKS01 WGEGVGMLLVERLS DARRNGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALTNA  
ORF17\_pKS02 WAEGAGMILVERLS DARRNGHQVLAIVVRGTAVNQDGASNGLTAPNGPSQQRVIRQALANA  
ORF17\_pKS03 WGEGVGMLLVERLS DARRNGHQVLAIVVRGTAVNQDGASNGLTAPNGPSQQRVIRQALANA  
ORF17\_pKS04 WAEGAGMLLVERLS EARAKGHPVLAIVRGSAINQDGASNGLTAPNGPSQQRVIRQALAGA  
ORF18\_pKS01 WAEGAGMLLVERLS DARKNGHTVLAIVVRGSAVNQDGASNGLTAPNGPSQQRVIRQALADA  
ORF18\_pKS02 WGEGVGMLLVERLS DARAKGHPVLAVVRGSAINQDGASNGLTAPNGPSQQRVIRQALASA

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ORF10\_pKS01 GLSAAEVDVVEAHGTTGLGDPIEAQALLATYGOEHETDDRPLWLGLSKSNIGHTQAAAAGV  
ORF10\_pKS02 GLSAADVDAVEAHGTTGLGDPIEAQALLATYGGQRPADRPLWGLSVKSNIGHTQAAAAGV  
ORF10\_pKS03 GLSAADVDVVEAHGTGTLGDPIEAQALLATYGRRERAPGRPLWLGLSIKSNIGHTQAAAAGV  
ORF10\_pKS04 DLSAADIDAVEAHGTTGLGDPIEAQALLATYGREREAGRPLWLGLSIKSNIGHTQAAAAGV  
ORF10\_pKS05 GLSAAEVDAVEAHGTTGLGDPIEVQALLATYGREREADQPLWLGLSIKSNIGHTQAAAAGV  
ORF11\_pKS01 RLSAAEVDVVEAHGTTGLGDPIEAQALLATYGGDRPEGRPLRLGLSLKSNIGHTQAAAAGV  
ORF11\_pKS02 GLSAADVDVVEAHGTGTLGDPIEAQALLATYGGDRPDGRPLWLGLSIKSNIGHTQAAAAGV  
ORF12\_pKS01 RLTPADIADVAEHGTTGLGDPIEAQALLATYGGQRTDGRPLWLGLSLKSNLIGHTQNAAGV  
ORF12\_pKS02 GLSAAEVDAVEAHGTTGLGDPIEAQALLATYGGQRDDQPLWLGLSVKSNIGHTQA AVAGA  
ORF12\_pKS03 GLSAADVDAVEAHGTTGLGDPIEAQALLATYGGDRPADRPLQLGLSIKSNIGHTQAAAAGV  
ORF12\_pKS04 GLAPGDIADVAEHGTGTLGDPIEAQALLATYGGDRPADRPLQLGLSIKSNIGHTQAAAAGV  
ORF13\_pKS01 RLSTDQDVVEAHGTTGLGDPIEAQALIATYGGQDRPADQPLLGLSVKSNIGHTQAAAAGV  
ORF14\_pKS01 RLTPDQVDAVEAHGTTGLGDPIEAQALIATYGGQDRPDGRPLWLGLSLKTNIHAQAAAAGV  
ORF14\_pKS02 GLTATMDVDAVEAHGTGTLGDPIEAQALLATYGGDRPEGRPLLLGLSIKSNLIGHTQAAAAGV  
ORF14\_pKS03 GVAAGHVDAVEAHGTTGLGDPIEAQALLATYGOEHETDDRPLLLGLSVKSNLIGHTQAAAGV  
ORF15\_pKS01 RLSATQVDAVEAHGTTGLGDPIEAQALLATYGGQDRPDGRPLWLGLSIKSNMGIHTQAAAGI  
ORF15\_pKS02 GLSAAEVDAVEAHGTTGLGDPIEAQALLATYGREHTEDSPLWLGLSIKSNMGHTQAAAAGV  
ORF15\_pKS03 GLSAADVDVVEAHGTTGLGDPIEAQALLATYGOEHETDEQPLLGLSIKSNFGHTQAAAAGV  
ORF16\_pKS01 RLSAADVDVVEAHGTTGLGDPIEAQALLATYGGDRPAGRPLLLGLSIKSNIGHTQAAAAGV  
ORF16\_pKS02 RLSAADVDVVEAHGTTGLGDPIEAQALLATYGGDRPAGRPLLLGLSIKSNIGHTAQAAGV  
ORF17\_pKS01 GLTPAQVDVVEAHGTTGLGDPIEAQALLATYGGNRPGRPLWLGLSVKSNIGHTQAAAAGV  
ORF17\_pKS02 GLTTAEVDVVEAHGTTGLGDPIEAQALLATYGGDRPAGQPLRLGLSIKSNIGHTQAAAAGA  
ORF17\_pKS03 GLTAAEVDAVEAHGTGTRLGDPIEAQALLATYGGDRPEGSPRLWLGLSIKSNFGHTQAAAAGV  
ORF17\_pKS04 RLTSQIDVVEAHGTTGLGDPIEAQALLATYGREREADQPLWLGLSIKSNMGIHTQAAAAGV  
ORF18\_pKS01 RLTAADVVDVVEAHGTTGLGDPIEAQALLATYGREHTEDSPLWLGLSVKSNLIGHTQAAAAGV  
ORF18\_pKS02 GLSAADVDVVEAHGTTGLGDPIEAQALLATYGOEHETDDSPLWLGLSIKSNFGHTQAAAAGV

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# Figure 2d

ORF10_pKS01	AGIIKMIMAMRHGVLPRTLHVDAPTPHVDWEAGAVTLLTEAVEWPESDRPRRAGVSSFGM
ORF10_pKS02	AGVMKMVMAMRHGVLPRTLHVDGPTPHVDWSAGDVALLTEQREWPATGHPRRAGVSSFGL
ORF10_pKS03	AGIIKMVLAMQHGVLPQTLHVDEPTPHVDWSAGEVTLLTEQTAWPTVDRPRRAGVSSFGI
ORF10_pKS04	AGIIKMVMAMRHGVLPRTLHVDEPSPQVDWEAGEVSLLTGAMPWPQTGRPRRAGVSSFGI
ORF10_pKS05	AGVIKMVLAMEHGVLPQTLHVDEPTPHVDWSAGDVALLTDAVEWPETGRPRRAGVSSFGF
ORF11_pKS01	AGIIKMVMAMRHGVLPRTLHVDEPTPNVDWTAGAVSLLTEPMPWPETGAPRRAAVSAFGV
ORF11_pKS02	AGIIKMVMAMRHGVLPRTLHVDEPTSHVDWSAGEVSLLSESAEWPLTERPRRAGVSSFGI
ORF12_pKS01	AGIIKMVMAMRHGVLPRTLHVDEPTSHVDWSTGAVALLTEPVEWPETGRPRRVGVSAFGV
ORF12_pKS02	AGIIKMVMAMRHGVLPRTLHVDEPTPYVDWSAGDIALLTEQRAWPETGRPRRAGVSSFGY
ORF12_pKS03	AGVIKMVLAMEHGVLPQSLHIDAPSPQVDWEAGDIALLTEQRQWPETGRPRRAGVSSFGF
ORF12_pKS04	AGLMKMVLAMQHGVLPQTLHVDEPTPHVDWSAGDIALLTEERREWPETGRPRRAGISSFGV
ORF13_pKS01	AGVIKMVLAMQHGVLPQSLHIDEPSPHVDWESGAVSLLTEQTAWPETTHPRRAGVSSFGF
ORF14_pKS01	AGVIKSVAMAMRHGVLPRTLHVDEPTPEVDWSAGDVSLLTEARPWPPLGDQPRRIGVSSFGM
ORF14_pKS02	AGVMKMVLAMQHGVLPQTLHVDEPTPHVDWSAGDVALLADAVAWPETGRPRRAGVSSFGI
ORF14_pKS03	AGVIKMVMAMRHGVLPRTLHVDEPTPHVDWSAGAVSLLTEQTPWPETGRPRRAGVSSFGI
ORF15_pKS01	AGIIKMVMAMRHGILPKTLHVDEPTPNVDWSEGAVSLLTESVPWPETGAPRRAVSSFGI
ORF15_pKS02	AGVIKMVLAIQHGVLPESLHIDQPSGNVDWAAGDVKLLTEAVPWPQTGGQPRRAGVSSFGI
ORF15_pKS03	AGIIKIVQAMRHGVVPKTLHVDEPTPHVDWSAGAVSLLTEQVAPWPETGRPRRAAIISSFGF
ORF16_pKS01	ASIIKMVEAMRHGVVPKTLHLDEPTPHVDWEAGAVSLIGEKIAPWPETGELRRAGVSSFGF
ORF16_pKS02	AGVMKMVLAMQHGVLPQSLHIAEPTPHVDWSAGEVALLTEERAWPETGRPWRAGVSSFGF
ORF17_pKS01	AGIIKMVLAMQHGVLPESLHIDQPSGNVDWAAGDVKLLTEAVPWPQTGGQPRRAGVSSFGV
ORF17_pKS02	AGIIKMILAMRHGVMPPSLHIGEPSPHIDWTAGAVSLLTEAAEWPDAGRPRRAGISSFGV
ORF17_pKS03	AGIIKMVQAMHHGVLPKTLHVDAWSPHVDWSAGAVSLLTEQMAWPETGRPRRAGVSSFGM
ORF17_pKS04	AGIIKMIMAIRHGVLPKTLHVDEPTPHVDWEAGAVSLLTESVPWPETGRPRRAGVSSFGI
ORF18_pKS01	AGIIKMVMAIRHGRIPKTLHVDEPTNVDWSAGAVSLLRESVEWPETGRPRRAAIISSFGI
ORF18_pKS02	AGIIKMVQAMHHGVVPKTLHVDEPSPHVDWSAGAVSLLTEQMAWPETGRPRRAAIISSFGI

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ORF10_pKS01	SGTNAHVIVEEP
ORF10_pKS02	SGTNAHTIIEEA
ORF10_pKS03	SGTNAHTIIEQA
ORF10_pKS04	SGTNAHTIIEQP
ORF10_pKS05	SGTNAHTVLEQA
ORF11_pKS01	SGTNAHTIIEQA
ORF11_pKS02	SGTNAHTIIEQA
ORF12_pKS01	SGTNVHTIIEQA
ORF12_pKS02	SGTNAHAVIEQA
ORF12_pKS03	SGTNAHTIIEQA
ORF12_pKS04	SGTNAHTILEQA
ORF13_pKS01	SGTNAHVIVEQA
ORF14_pKS01	SGTNAHIIIESA
ORF14_pKS02	SGTNAHTIIEQA
ORF14_pKS03	SGTNAHAIIEQA
ORF15_pKS01	SGTNAHTILEQA
ORF15_pKS02	SGTNAHTIIEQA
ORF15_pKS03	SGTNAHAIIEQA
ORF16_pKS01	SGTNAHVIVEQA
ORF16_pKS02	SGTNAHAIIEQA
ORF17_pKS01	SGTNAHTVIEQA
ORF17_pKS02	SGTNAHVIIIEQP
ORF17_pKS03	SGTNAHAIIELA
ORF17_pKS04	SGTNAHTIIEQA
ORF18_pKS01	SGTNAHTIIEQA
ORF18_pKS02	SGTNAHTIIEQA

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ORF10_pat01      VLLPWALSAKTPEALRAQAR-----RLGTLIAAQP--HVTPL---DIGHSLATTRGRF
ORF10_pat02      SVLPLLIISAQSDAGLRAQSE-----QLATHLVGNP--DVPIG---DIAYSLTTGRSGL
ORF10_pat03      LPLPYVLSAKSPPEALRAQAS-----VLRTHLEATD--HNGPG--SDDLAFSLATRAHL
ORF10_pat04      PVVPVWLSGKGEEALRAQAR-----QLQSYVLRAP--ELRPV---DIAGSLAVGRASF
ORF10_pat05      GVMPWTLTSAKSEAALRVQAE-----RLRTRIA-----SDPLLPQVDVAYSLATSRAL
ORF11_pat01      AVLPWTLTSGRSTAALRAQAA-----RLLTTQGGQD--ATEPGRPLDIGYSLATTRAAL
ORF11_pat02      GTVPYVLSAKSSDALRAQAR-----QLLAVVEAAE--SPRVA---DLAYSLATSRAGL
ORF12_pat01      KALPWLLSAKGRDALRDRRAA-----QLLAYAEEHP--DLRPV---DIAGSLAVGRPSF
ORF12_pat02      PVLPLLVSGRTPALRAQAERLRPAATALATGTVTNSG-ALEAL---DLGYSLATSRAL
ORF12_pat03      DFVPLMLSAKSDVALRAQAA-----SLRARLIAAP--DMRLS---DVGSTLTTGRSAF
ORF12_pat04      AVSAWPLAGKTEAGLREQAE-----RLLAHIDAHS--ELR---PVDVGHSLATGRAAF
ORF13_pat01      -VVPVWLSGKSAGALRAQAE-----RLSGFLAGASAVDVPSV---DVGWSLASSRAGL
ORF14_pat01      GALPVVLSGRTEPALRAQAA-----ALHAHLAHP--GLGIA---DLAFSQALTRAAL
ORF14_pat02      GPQPWLLSAKTRDALHDQAR-----RLHAHAELNP--ELSPA---DLGLSLAAGRSAL
ORF14_pat03      SSVPLIVSARGEDALRAQAR-----RLHAHVHADP--GLRAV---DLGLSLATRSAL
ORF15_pat01      VPPLWTLTSAKSPAALRAQAG-----KLHAHLTAHP--GLRPG---DIAHSLAVGRDTF
ORF15_pat02      SALPLQLAGRSAEALSAQAR-----ALSAHLT-----AHPDVPLADLAYSLATSRATF
ORF15_pat03      GSLPWLLSAKGADALRDQAA-----RLRAHAIGHP--ELSLA---DIGYALATSRTAL
ORF16_pat01      -VVPVWLSGKSAGALRAQAE-----RLSGWLAGASAAGVASV---DVGWSLASSRAGL
ORF16_pat02      -VLPWTLTAKTEKALQGQAE-----RLLTQLT--TRSDRLV---DVGHSLATTRTAL
ORF17_pat01      GPVPVVLVSQSDAALRAQAE-----RLAAHLRAHPGLGADTGTLTDLGFSLATSRSSL
ORF17_pat02      TPLPFALSGRTFPAALRAQAA-----RLIGHLAPRP--EAPAA---DVALSLATTRTAL
ORF17_pat03      AALPNWLSARTPDALRAQGE-----RLLSHLETCE--THPETVLADIGHSLTTGRALF
ORF17_pat04      RVLPPVLSAKSAGALRGQAV-----RLKAHVEASP--EVSGAGAVDVAYSLATRRAVF
ORF18_pat01      PVLPPVPSARTEEALHAQAE-----RLLAHVR-----TNPDQAPVGVAYSLATGRAAL
ORF18_pat02      RVLPPVLSAKSAGALRGQAV-----RLKAHVEASP--EVSGAGAADVAYSLATRRAVF

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ORF10_pat01      EQRAIVLGDD---REAFDLALHALAEGN-----DTPSVVQGAA-APGKLAFLFTGCG
ORF10_pat02      ETRAILVGADADN-RTGLAAALRSLAAGE-----QAPGLVQGTV-TEGGLAFLFTGCG
ORF10_pat03      EHRAVLT-ADD---PQEFREALARLADG-----PSPRITTTGAV-SDGRTAFLFTGCG
ORF10_pat04      EDRAAVV---AAD-REGLAALAALADGG-----SATGAVEGSA-VGGKLAFLFTGCG
ORF10_pat05      ERRAVVVATE---RDEFLAGLKALASGQ-----PAPGLVQGR-VTEGGLAFLFTGCG
ORF11_pat01      EHRAVLL-GRT---EDDFAAALSALAEGA-----ESAGLVQGRV-TEGGLAFLFTGCG
ORF11_pat02      DHRAALVADD---RENLTRALAALAADE-----QVPGLVRGTA-TGGGLAFLFTGCG
ORF12_pat01      EDRAAVV-AAD-REGLLAGLAALADGG-----SATVLKGSQSLVGKLAFLFTGCG
ORF12_pat02      EHRAVLIGTPSD-GQALASRLDALAAGE-----QVPGLVQGTA-SCGGLAFLFTGCG
ORF12_pat03      ERRAALV---AGG-REGLLAGLEALADGG-----SAAGLVEGSP-VSGKLAFLFTGCG
ORF12_pat04      DHRAVLVAGDD---RSEFRRALAALASGE-----SVAQVVQGIARPDQVAFLTGCG
ORF13_pat01      EHRAVVLG-----DHAAGVAAVASGV-----MAAGVVTGSV-VGGKTAFFVFPGCG
ORF14_pat01      DRRAAVVADD---RDALLAGLAALAEGR-----PSADVVEGSA-TDGKLAFLFTGCG
ORF14_pat02      ERRAAVI-AAD---RDGLLAGLAALADGG-----AAAGLVEGSP-VAGKLAFLFTGCG
ORF14_pat03      EQRAALVAGD---RAELLRGLDALARGE-----DTAGLVRGTA-REGQVAFLTGCG
ORF15_pat01      EHRAVLT-SADG-PVGLVRLEALADSAPEDTAPADRAPGVTRGRP-VAGKLAFLFTGCG
ORF15_pat02      DHRAVLVATEGTTAATAVTALDALADRR-----TAPGLVRGTASKGGRTAFLFTGCG
ORF15_pat03      DRRAAVVAGD---REEFLAGLAALAEGA-----TAAGLTEGSP-AGGKLAFLFTGCG
ORF16_pat01      EHRAVVLG-----DHAAGVGAVASGV-----MAAGVVTGSV-VGGKTAFFVFPGCG
ORF16_pat02      DQRAVLIGRDRP---DYLGALTALAAGD-----TSPLLVGQAV-VGGKTAFFVFPGCG
ORF17_pat01      DRRAVLFGDR---DSLLADLSALAEGE-----QPAGPVLGAV-GEGKTAFLFTGCG
ORF17_pat02      DRRAAVIAHD---RTELLAGLTALAEGH-----DSARLVQHTA-ADGRTAFLFTGCG
ORF17_pat03      EHRATVVAGD---RDGFRAGLAALAEGR-----TAAGLIQSSSTGGRTAFLFTGCG
ORF17_pat04      DHRAVVVAGD---REELLRSLAAVESEG-----AAAGVTRGAVG-GGKLAFLFTGCG
ORF18_pat01      EHRAVVVATD---RETALADLAALASGE-----TSARVVLGEPGARGKTAFLFTGCG
ORF18_pat02      DHRAVVVAGD---REELLRLAAVESEG-----TAAGVTRGTAG-GGKLAFLFTGCG

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# Figure 3b

	M1
ORF10_pat01	SQRLGMGRELYETHPVFADALDDACWYLDQLELPL--LDVLFADEGSPEAALLHQYTAYT
ORF10_pat02	SQRLGMGRELYETYPVFADALDAVCARMD--LEVPL--RDVLFYGAY----AGLLDETAYT
ORF10_pat03	SQRLGMGRELYEAYPVFADALDAVCAHVDAHLEVP--KDVLFYGAD----AGLLDQYAYT
ORF10_pat04	SQRLGMGRELYEAYPVFAEALDAVCAR----LELPL--KDVLFYGAD----AGLLDETAYT
ORF10_pat05	SQRLGMGRELYETYPVFADALDAVCVR----LELPL--MDVLFYGE----RDALDEGTYT
ORF11_pat01	SQRLGMGRELYEAYPVFADALDAVCAR----LELPL--KDVLFYGAD----AGLLDETAYT
ORF11_pat02	SQRLGMGRELYETYPVFARALDAV----DARLELPM--KEVLFYGAD----ADLLNETAHT
ORF12_pat01	SQRLGMGRELYETYPVFAQALDAVCER----LELPL--KNVLFYGTD----SALDETSYT
ORF12_pat02	SQRLGMGRELYETYPVFAEALDAVCAR----LELPL--KEVLFYGAD----GAALDQYAVT
ORF12_pat03	SQRLGMGRELYEAYPVFADALDAVCVR----LELPL--MDVLFYGAD----AGLLNETAYT
ORF12_pat04	SQRLGMGRELYETYPVFADALDAVCAR----LELPL--KDVLFYGGD----ADRLNETAYT
ORF13_pat01	SQWVGMAVGLLDSSPVFAARVEECAKALEPFTDWSL--VDVLRGVEG--APSLERVDVV
ORF14_pat01	SQRPGMGRELYATYPVFAQALDAVCER----LELPL--KDVLFYGTGAA--GAALDETAYT
ORF14_pat02	SQRLGMGRELYDTYPVFADALDAVCAHVDAHLEVP--KDVLFYGAD----TGLLDQYAYT
ORF14_pat03	SQRPGMGRELYDAHPVFADALDEICGELDRHLEVP--KGVLFATE----GDLIHQYAYT
ORF15_pat01	SQRLGMGRELYETYPVFAQALDAVCERLN--LEVPL--RDVLFYGAD----AGLLDQTVYT
ORF15_pat02	SQRLGMGRELYEAYPVFARALDAVCDR----LELPL--KDVLFYGTD----AGLLNETVYT
ORF15_pat03	SQRLAMGRELYSAHPVFARALDAVCDG--LALDVPL--KQVLFYGS--ADLLDRYAYT
ORF16_pat01	SQWVGMAVGLLDSSPVFAARVEECAKALEPFTDWSL--VDVLRGVEG--APSLERVDVV
ORF16_pat02	SQWVGMAVGLLDSSPVFAARVEECAKALEPFTDWSL--RDVLRGVTEG--APSLDRVDVV
ORF17_pat01	SQRLGMGRELYATHPGFARALDEVRAELDQHLEPL--FDVLFAAEGTPEADLLDETAYT
ORF17_pat02	SQRPGMGRELYETYPFAEALDAVCAELDPHLEQPL--KEVLFYAD----GDLLNRTGRT
ORF17_pat03	SQRLGMGRELYEAYPVFARALDEVCA--LELPLPLKDVLFYGTD----TGLLNETAYT
ORF17_pat04	SQRLGMGRELYETYPVFAEALDAVCAR----LELPL--KDALFYGTD----AGLLDETAYT
ORF18_pat01	SQRLGMGRELYEAYPVFADALDAVCAR----LELPL--KDVLFYGAD----ARLLDETAYT
ORF18_pat02	SQRLGMGRELYETYPVFARALDAACAG----LELPL--KDALFYGAD----AGLLDETAYT
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	M2	M3
ORF10_pat01	QPALFAVEVALFRLVDSWGLKPDFVAGHS	IGEIAAAHVAGVFSLEDACMLVAARGRLMQA
ORF10_pat02	QPALFAVEVALFRLVDSWGLRPDFVAGHS	IGEIAAAHVAGVLSLDDACALVEARGRLMGA
ORF10_pat03	QPALFAVEVALFRLVESWGKPDFVAGHS	IGEIAAAHVAGVFSLQDASELVFARGRLMQA
ORF10_pat04	QPALFAVEVALFRLVDSWGLRPDFVAGHS	IGEIAAAHVAGVFSLDDACALVEARGRLMGA
ORF10_pat05	QPALFAVEVALFRLVESWGVRPDFLAGHS	IGEIAAAHVAGVFSLDDACALVEARGRLMQA
ORF11_pat01	QPALFAVEVALFRLVESWGKPDFVAGHS	IGEIAAAHVAGVFSLEDACALVSARGRLMGA
ORF11_pat02	QPALFAVEVALFRLLESWGVRPDFLAGHS	IGEIAAAHVAGVFSLDDACTLVEARGRLMQA
ORF12_pat01	QPALFAVEVALFRLVDSWGLKPDFLAGHS	IGEIAAAHVAGVFSLDDACALVSARGRLMGA
ORF12_pat02	QPALFAIEVALFRLVDSWGLRPDFVAGHS	IGEIAAAHVAGVFSLEDACRLVEARGRLMQA
ORF12_pat03	QPALFAVEVALFRLVDSWGLRPDFLAGHS	IGEIAAAHVAGVLSLDDACALVEARGRLMGA
ORF12_pat04	QPALFAVEVALFRLVESWGVRPDFLAGHS	IGEIAAAHVAGVFSLDDACALVEARGRLMQA
ORF13_pat01	QPALFAVMVSLAEVWRAAGVRPGAVIGH	SQGEIAAACVAGILSLEDAAARVVALRSQAIGR
ORF14_pat01	QPALFAVEVALFRLVDSWGLKPDFLAGHS	IGEIAAAHVAGVFSLEDACRLVEARGRLMQA
ORF14_pat02	QPALFAVEVALFRLVDSWGLRPDFLAGHS	IGEIAAAHVAGVFSLQDASELVVARGRLMQA
ORF14_pat03	QPALFAVEVALFRLLESRGVQPDFLAGHS	IGEIAAAHVAGVFSLQDASELVVARGRLMQA
ORF15_pat01	QTALFAVEVALFRLVDSWGLKPDFLAGHS	IGEIAAAHVAGVFSLEDACALVSARGRLMGA
ORF15_pat02	QPGFLFAVEVALFRLLESWGKPDFLAGHS	IGEIAAAHVAGVLSLDDVCLVEARGRLMGA
ORF15_pat03	QPALFAVEVALFRLVDSWGLKPDFLAGHS	IGEITAHHVAGVLSLDDACTLVAARGRLMQA
ORF16_pat01	QPALFAVMVSLAEVWRAAGVRPGAVIGH	SQGEIAAACVAGILSLEDAAARVVALRSQAIGR
ORF16_pat02	QPALFAVMVSLAEVWRAAGVRPDAVIGH	SQGEIAAACVAGILSLEDAAARVVALRSQAIGR
ORF17_pat01	QSALFAVEVALFRQLEQWGVGADFLIGH	SIGELAAHVSGVFTLADAACKLVAARGRLMQA
ORF17_pat02	QPALFALETALYRLVDSWGVRPDFVAGHS	IGEITAHHVAGVLSLPLDAATLVAARGRLMQE
ORF17_pat03	QPALFAVEVALFRLVDSWGLKPDFLAGHS	IGEIAAAHVAGVLSLEDACALVSARGRLMGA
ORF17_pat04	QPALFAVEVALFRLLESWGVRPDFLAGHS	IGEIAAAHVAGVLSLDDACALVEARGRLMQA
ORF18_pat01	QPALFAVEVALFRLVDSWGLKPDFLAGHS	IGEIAAAHVAGVFSLEDACALVSARGRLMGA
ORF18_pat02	QPALFAVEVALFRLLESWGVRPDFLAGHS	IGEIAAAHVAGVLSLDDACALVAARGRLMQA
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# Figure 3c

ORF10_pat01	LPAG-GVMIALQASEDEVLPLLT----	DRVSIAAINGPQAVVIAGDEDAAAAIAETFQAA
ORF10_pat02	LPGG-GVMIAVQAPEAEVLPLLT----	ERVSTAAINGPQSVVIAGDEADAVAIVESFTG-
ORF10_pat03	LPTG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFTD-
ORF10_pat04	LPAG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPRSVVIAGDEADAVAIVESFTG-
ORF10_pat05	LPTG-GVMIAVQASEDEVLPLLT----	ERVSTAAINGPQSVVIAGDEADAVAIVESFTG-
ORF11_pat01	LPAG-GVMIAVQASEAEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFAD-
ORF11_pat02	LPTG-GVMIAVQASEDEVLPLLT----	GQVSIAAINGPQSVVIAGDEADAVAIAESFTD-
ORF12_pat01	LPGG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFAD-
ORF12_pat02	LPGG-GVMIAVQASEAEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFTG-
ORF12_pat03	LPAG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIVESFTG-
ORF12_pat04	LPTG-GVMIAVQASEAEVLPLLT----	ERVSTAAINGPQSVVIAGDEADAVAIVDAFND-
ORF13_pat01	VLAGLGGMVSVPLPAKAVRELIAPWGEGRI	SVAAVNGPSSVVVSGEAAALDELLVSCese
ORF14_pat01	LPTG-GVMIAVEASEDEVLPLLT----	DWVSIAAVNGPRSVVVGDEDAAVAIAEFAAQ
ORF14_pat02	LPTG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFTG-
ORF14_pat03	LPTG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFTD-
ORF15_pat01	LPGG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFAD-
ORF15_pat02	LPGG-GVMIAVQASEAEVLPLLT----	DRVSIAAINGPRSVVIAGDEADAVAIVESFTD-
ORF15_pat03	LPTG-GVMIAVEASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIAESFTG-
ORF16_pat01	VLAGLGGMVSVPLPAKAVRELIAPWGEGRI	SVAAVNGPSSVVVSGEAAALDEMLASCESE
ORF16_pat02	VLAGLGGMVSVLPAKAVRELIAPWGEGRI	SVAAVNGPSSVVVSGETAALDELLASCESE
ORF17_pat01	LPAD-GAMIAVEATEDEVLPLLT----	GRVSIAAVNGPRSVVVGDEDAATAAETLRAR
ORF17_pat02	LPEG-GAMIALTATEDEVLPLLAGH-	EDRIGIAAVNSASSVVISGEEGLEIAAEFERR
ORF17_pat03	LPGG-GVMIAVQASEGEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIVESFS-
ORF17_pat04	LPTG-GVMIAVQASEAEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIVESFSG-
ORF18_pat01	LPAG-GVMIAVQASEDEVLPLLT----	ARVSIAAINGPQSVVIAGDEADAVAIVESFTG-
ORF18_pat02	LPTG-GVMIAVQASEDEVLPLLT----	DRVSIAAINGPQSVVIAGDEADAVAIVESFSG-

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## M4

ORF10_pat01	GRKTKRLTVSHAFHSPHMDAMLEEFRLVAQVLDYAKPTLPVVSLLTGTTATPAELATPAY
ORF10_pat02	-RKSRLTVSHAFHSPHMDGMLDFRAVAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF10_pat03	-RKSRLTVSHAFHSPHMDGMLDAFREIAEGLSYEPSRIPVVSNTLGTALVS-DEMGSADF
ORF10_pat04	-RKSRLTVSHAFHSPHMDGMLDFRAVAEGLSYEAPRIPVVSNTLGTALT-DEMGSADF
ORF10_pat05	-RKSRLTVSHAFHSPHMDGMLADFRKVAEGLSYEAPRIPVVSNTLGTALVT-DEMGSADF
ORF11_pat01	-RKSRLTVSHAFHSPHMDGMLDFRLVAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF11_pat02	-RKSRLTVSHAFHSPHMDGMLADFRKVAEGLVYENPRIPVVSNTLGTALT-DEMGSADF
ORF12_pat01	-RKSRLTVSHAFHSPHMDGMLDFRVVAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF12_pat02	-RKSRLTVSHAFHSPHMDGMLDFRAVAEGLSYEAPRIAVVSNTLGTALVS-DEMGSADF
ORF12_pat03	-RKSRLSVSHAFHSPHMDGMLDFRVVAEGLSYDAPRIPVVSNTLGTALT-DEMGSADF
ORF12_pat04	-RKSRLAVSHAFHSPHMDGMLADFRKVAEGLSYEAPRIPVVSNTLGTALT-DEMGSADF
ORF13_pat01	GVRAKRIADVASHSAQVELLREELAELLAPIVPRAAEVFPFLSTVTGEWVRGPELDGG-Y
ORF14_pat01	GRKTKRLTVSHAFHSPHMDGMLDAFRTVAQGLSYGTTPRIPVVSNTLGTALT-DEMGSADF
ORF14_pat02	-RKSRLTVSHAFHSPHMDGMLDFRAVAEGLSYEAPRIPVVSNTLGTALIS-DEMGSADF
ORF14_pat03	-RKSRLTVSHAFHSPHMDGMLADFRKVAEGLVYENPRIPVVSNTLGTALT-DEMGSADF
ORF15_pat01	-RKSRLTVSHAFHSPHMDAMLEDFRAVAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF15_pat02	-RKSRLTVSHAFHSPHMDGMLDAFREIAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF15_pat03	-RKSRLTVSHAFHSPHMDGMLDAFREIAEGLSYGTPLIPVVSNTLGTALT-DEMRSDF
ORF16_pat01	GVRAKRIADVASHSAQVELLREELAELLAPIVPRAAEVFPFLSTVTGEWVRGPELDAG-Y
ORF16_pat02	GVRAKRIADVASHSAQVELLREELAELLAPIVPRAAEVFPFLSTVTGEWVRGPELDGG-Y
ORF17_pat01	GRRTKRLTVSHAFHSPHMDGMLDAFREVAESVAYAPPVPIVVSNTLGTASVTAEICAADY
ORF17_pat02	GRRTKRLTVSHAFHSPHMDGMLDAFREVAESLTYRAPAIPVVSNTLGTAG-DELRTAEH
ORF17_pat03	-RKSRLTVSHAFHSPHMDGMLDFRAVAEGLSYGAPRIPVVSNTLGTALVS-DEMGSADF
ORF17_pat04	-RKSRLTVSHAFHSPHMDGMLAGFRKVAESLTYEAPRIPVVSNTLGTALT-DEMGSADF
ORF18_pat01	-RKSRLTVSHAFHSPHMDGMLDFRVVAEGLSYEAPRIPVVSNTLGTALVS-DEMGSADF
ORF18_pat02	-RKSRLTVSHAFHSPHMDGMLAGFRKVAESLTYEAPRIPVVSNTLGTALT-DEMGSADF

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# Figure 3d

ORF10_pat01	WVRHVRDAVRYLDGVRTLHQGVRTFLELGPDAVL TAMAQDCVDP-----QGAAAFAPALR
ORF10_pat02	WVRHVREAVRFLDGMRVLEAAGVTTTYVELGPGGVLSALAQECVSG-----DGAAFVFPVLR
ORF10_pat03	WVRHVREAVRFLDGI RTLEAAGVTKYVELGPDGVLSAMAQDCVSG-----EGSVFIPVLR
ORF10_pat04	WVRHVREAVRFLDGIRALEAAGVTTTYVELGPGGVLSALAQECVSG-----DGAAFVFPVLR
ORF10_pat05	WVRHVREAVRFLDGI RTLEAAGVTTTYVELGPDGVLSAMAQECVTG-----EDSVFVFPVLR
ORF11_pat01	WVRHVREAVRFLDGI RTLEAAGVTKYVELGPDGVLSAMAQDCVSG-----EGSVFIPVLR
ORF11_pat02	WVRHVREAVRFLDGIRALESRGVTTYIELGPDGVLSALAQDCLTAGTG--TGTAIFAPVLR
ORF12_pat01	WVRHVRETVRFLDGI RTLEAAGVTKYVELGPDGVLSALAQDCVSG-----EDSVFIPVLR
ORF12_pat02	WVRHVREAVRFLDGIRALEAAGVTTTYVELGPGGVLSALAQECVSG-----DGAAFVFPVLR
ORF12_pat03	WVRHVREAVRFLDGIRALEAAGVTTTYVELGPDGVLSAMAQECVTE-----GGAAFVFPVLR
ORF12_pat04	WVRHVREAVRFLDGIRALEAAGVTVYVELGPDGVLSAMAQECVTG-----EGAAFPVLR
ORF13_pat01	WFQNLRRTVLEEEATRTLLEQGFGVFVLESSPHPVLSVGMQETVEDAG---REAAVLGSLR
ORF13_pat01	WVRHVREAVRFLDGIRKLSAQGVTTYIELGPGGVLSALGQDCQTATG--PRAAFLPALR
ORF14_pat02	WVRHVREAVRFLDGI RTLEAAGVTKYVELGPDGVLSAMAQDCVSG-----EGSVFIPVLR
ORF14_pat03	WVRHVREAVRFLDGIRALEAAGVTTHIELGPDGVLSAMAQECVSG-----EDTVFVFPVLR
ORF15_pat01	WVRHVRETVRFLDGIRALTERNVVHFVELGPDVLSAMAQDCPSA-----DTAAFPVLR
ORF15_pat02	WVRHVREAVRFLDGIRALEAAGVTTTYVELGPDGVLSAMAQECVTG-----EDSVFVFPVLR
ORF15_pat03	WVRHVREAVRFLDGI RTLEDAGVTTTYIELGPGGVLSAMGQSCVTR-----DDAFLPALR
ORF16_pat01	WFQNLRRTVLEEEATRTLLEQGFGVFVLESSPHPVLSVGMQETVEDAG---REAAVLGSLR
ORF16_pat02	WFQNLRRTVLEEEATRTLLEQGFGVFVLESSPHPVLTMGVQETVEDAG---RDAVLGSLR
ORF17_pat01	WVRHVREAVRFLDGIRKLSAQGVTTYIELGPGGVLSALAQECVTG-----QDAVFPVLR
ORF17_pat02	WVSHVREAVRFLDGI RTLD AEHVTTYELGPQGVLSGLGRDCLTDPADPADTAVFVPALR
ORF17_pat03	WVRHVREAVRFLDGIRALEAAGVTTTYIELGPDGILSAMAQECITG-----EGAAFPVLR
ORF17_pat04	WVRHVREAVRFLDGI RTLEAAGVATYVELGPDGVLSAMAQDCVTG-----EGAAFPALR
ORF18_pat01	WVRHVREAVRFLDGIRALEAAGVTTYVELGPDGVLSAMAQACVTG-----ENSVFVFPVLR
ORF18_pat02	WVRHVREAVRFLDGIRALEAAGVTAYVELGPDGVLSALAQECVTG-----EGAAFPALR
	*. :.* :*. :. : * . :.* :* : : : . **

ORF10_pat01	SGRPEAATVLNAVAHAHVRGAETDWAFFAGTGAQRVDLPTYAFQRQRYWM--
ORF10_pat02	SGRPEAETAVTALAQAHVVRGVDVDWAFFSGTGVRVDLPTYAFQRQRFWP--
ORF10_pat03	KARPEAESVTTALASAHVHGIPVDWQAYFAGTGAQRVDLPTYAFQRQRYWP--
ORF10_pat04	SGRSEAETAVTALAQAHVVRGVNVDWAFFAGTGAERVLDLPTYAFQRQRYWL--
ORF10_pat05	SGRPEAESVTTALAQVHVVRGIAVDWQAYFAGTGAQRVDLPTYAFQRRRYWL--
ORF11_pat01	KARPEAESVTTALATAHVHGI PVDWQAFYAGTGAQRVDLPTYAFQHERYWL--
ORF11_pat02	AARPEAESVTTALATAHVHGT PVDWRAYFAGTGARRADLPTYFPQGRRYWP--
ORF12_pat01	KARPEAETVATALASAHVHGIPVDWRAYFAGTGAQRVDLPTYFPQGRRYWI--
ORF12_pat02	SGRSEAETVVTALAQAHVVRGVEVDWAFFAGTGAERIDLPTYAFQRQRYWP--
ORF12_pat03	KGRPEAETVMATLGQAHVVRGVAVDWHSVYG--TGAQRVDLPTYSFQRQRYWP--
ORF12_pat04	KGRPEAETITTAALAHATHGIAVDWQAYFAGTGAQRVDLPTYAFQRQRYWV--
ORF13_pat01	RGEGGLERFWLSLGEAWVRGVGVVDWHAVFAGTGAQRVDLPTYAFQSQRFWPEA
ORF14_pat01	TGRPEASSLTAAVAGAHVRGLSPDWTVRFAGTGAQRVELPTYAFQRELYWP--
ORF14_pat02	KARPEPESVTTALT AHVHGIPVDWQAFFAGTGARRVDLPTYAFQRQRYWP--
ORF14_pat03	PGRPEAETVTTLARVHVGV PVDWQAYFSGTGAQRVDLPTYAFQRKRYWL--
ORF15_pat01	KGRSETGSLTDALARLHVGGVAVDWDAYYSGTDVQRVDLPTYAFQRAHYWL--
ORF15_pat02	SGRPEAESVTTALAQAHVVRGIAVDWQAYFAGTSAQRVDLPTYRFQREHYWP--
ORF15_pat03	ADRSEEETLTS AVARAHLRGITVDWDAYYSGTGARRVDLPTYAFQRQRYWL--
ORF16_pat01	RGEGGLERFWLSLGEAWVRGVGVVDWHSVYFAGTGARRVDLPTYAFQHEHYWLES
ORF16_pat02	RGEGGLERFWLSLGEAWVRGVGVVDWSAVFAGTGARRVDLPTYAFQSQRFWPEA
ORF17_pat01	GDRPEAAAFATAVAQAHVHGVAVDWSAVFAGRGATRIDLPTYAFQRELYWP--
ORF17_pat02	RDRGEAEALTAAIAAAHTRGVPLDWSAYFAGTGARRVELPTYAFQRERFWL--
ORF17_pat03	AGRDEAETVLSALAAAHVRGV PVDWQAFYAPAGAQRVPLPTYAFQRSVYWL--
ORF17_pat04	KGRPETETIT TALALAHAGTSVDWET YFAGTGAQGVELPTYAFQRDHYWL--
ORF18_pat01	SGRSEAESVTTALAQAHVVRGIAVDWQAYFAGTGAERVLDLPTYAFQRDHYWL--
ORF18_pat02	KGRPEAETIT TALALAHNHGTSVDWET YFSGTGAQRVDLPTYAFQRERYWI--
	. : : * ** :. . . **** ** :*

# Figure 4

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ORF10_pDH03  IGLGDAGHPLLGAAVALADSEGVLFRTGRLSLDTHPWLADHTILGSVLLPGTAFVDLAIIRA
ORF11_pDH01  AGLDPAGHPLLGAAVTLAGSDSVLFTGRLSLRTQPWLADHTVSGTTVLLPGAAFVELAVRA
ORF12_pDH01  AGLEEAGHPLLGAAVPLADSEGVLFRTGRLGRTSHPWLADHAVMDTVLLPGTAFVDLAVRA
ORF12_pDH04  AGIGSAGHPLLGAAVELPDSGDFLFTGRLSLRTHPWLADHVVDTVVLLPGAAFVELAVRA
ORF14_pDH02  IGLDDTAHPLLSAGVALPESDGMVFAGRLALSTHAWLADHAILGSVLLPGTAFVELATRA
ORF14_pDH03  AGLDAADHPLLGATVSLPGSDGLVLTGRLALSTHPWLSDHTVMDTVLLPGTAFVELALRA
ORF15_pDH01  AGLGAAGHPLLGAAVALADLDGFLYTGRLSLDTHPWLADHAVMGSVLLPGTAFVELAIRA
ORF15_pDH02  LGLAAAGHPLLGAAVTLADADGCVLTGRLSLRTHPWLADHAVMGSVLLPGTAFVELALHA
ORF15_pDH03  AGLGSAGHPLLGAAVELPDSGDFLFTGRLSLRTHPWLGDHVRVAGTVLLPGAALLELAVRA
ORF17_pDH01  AGIGAADHPLLGAAIALADGDGHLFTGRLSLATHPWLADHTVMDTVLLPGTAFVELALQA
ORF17_pDH02  AGMGAHHHPLLGAAVALADGEGFLFTGRLSLDTHPWLADHAVMGNVLLPGTAFVELAIRA
ORF17_pDH03  AGLGATDHPLLSAAVELPDSGDFLFTGRLSLATHPWLADHAVLGSVLLPGTAFVELALRA
ORF17_pDH04  FGLGATDHPLLDATIELPDSGDFLFTSRLSLDTQPWLADHAVLGSVLLPGTAFVEIAVRA
ORF18_pDH01  AGLRSADHPLLGASVALADAEGLLLTGRLSLDTHPWLADHAVAGTVLLPGTAFVELALRA
ORF18_pDH02  AGLGAAEHHPLLGAAVELPDSGGLLTGRLSLLSHPWLADHAVAGTVLLPGTAFVELALHA
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#
ORF10_pDH03  GDQVGCDVVEELTLEAPLVVPQRGGVQLQLVVEAP--SGPGQRPFVSHS
ORF11_pDH01  GDQAGCERVEALVLDAPLALPAEGAVRVQVLVEAP--DEQGRRPFTVSS
ORF12_pDH01  GDQVGCDVVEELTLEAPLVLPERGAVQIQMHVGAPDADGTGRRTFTLSS
ORF12_pDH04  GDEVGCEEVEELVLEAPLVLPKGAVALRLSVGGA--DDQGRRSVHVHS
ORF14_pDH02  GDQVGCDYLEELTLEAPLVLPKHGGVQLRVWVGAA--DESGRRPFALHS
ORF14_pDH03  GELVGCGAVEELALEAPLTLADQGAVQFQLAVDAP--DGAGRRTLTLSH
ORF15_pDH01  GDQVGCDLLEELTLHAPLVLPAGGVQVQLWVGAP--DATGRRTLGVHS
ORF15_pDH02  GERVGTRALDELTLQAPLILPNEGAVQLQVVVGAP--DAAGHRTVAVYS
ORF15_pDH03  GDHAGCDLLEDLTLEAPLVLPKAGGVQLRLVVAEP--DASRRRVFHIYS
ORF17_pDH01  GDHTGCDLLEDLTLEAPLVLPKHGGVQIQLVAVGAP--DAEGRRSLTSHS
ORF17_pDH02  GDQAGCDLLEELTLEAPLILAPQAAARLQIVVGAP--DGSGRRTLDVYS
ORF17_pDH03  GDQVGCDLIDELTLEAPLVLPKHGGVQLRLAVAAA--DATGRRTLAFHS
ORF17_pDH04  GDQVGCDVLEELTLEAPLVVPERGGVQLRLTVAAA--DESGRRGLSLYS
ORF18_pDH01  GDQVGCDLIDELTLAAPLVLPKGGVELQITVAAP--DESGRRSVAFHS
ORF18_pDH02  GQRVSGSGLLEELTLEAPLVLPERGALQLRVSVAAP--DEAGRRALHVHS
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# Figure 5

ORF17_pER02	QLAVRRGTVHAPRLARVPAATPLTPPPGESAWRMDIEDKGTLDHLLTVSPESAAPLEPG
AAF71776_mod05   NYST	QLALRDGGVLAARLARFDTAALTPPAD-RAWRLDSTAKGSLNGLALTPYPAALAPLTGH
AAF71767_mod15   NYST	QAVVREGTVRVGRLARLDSEGRGLVPPPG-TPWRLGSRAGSLDGLALLPHPEARPLTGH
	* .:* * * . ***** .: . *.*.*. .**:. **.*: *.* * * : **
ORF17_pER02	QVRVAVRAAGLNFRDVLNALGMYPG-DPGLMGSEGAGIVVETGPGVTGLAPGDRVMGMLP
AAF71776_mod05   NYST	EVRVEVRAAGLNFRDVLNALGMYPGDDVGSFGSEAAGVVVEVGPEVTGLAPGDQVMGMIT
AAF71767_mod15   NYST	EVRVGIRAAGLNFRDVLNALGMYPG-DAGLFGSEAAGVVVEVGPEVTGLAPGDRVMGMLF
	:*** :***** * * :***.*:***.* *****:****:
ORF17_pER02	GSFGPLAVVDRMIAPMPEGWTFEAASVPIVFMTAYYALHDLAQLGGESLVVHAAAGG
AAF71776_mod05   NYST	GSFGSLAVDDARRLARLPEDWSWETGASVPLVFLTAYYALKELGGLRAGEKVLVHAGAGG
AAF71767_mod15   NYST	GGFGPLGIADARLLTPVPADWSWETGASVPLVFLTAYYALKELGGLRAGEKVLVHAGAGG
	*.*.*.: * * :.*.*: .*****:***:*****:.*.*.*.:***.***
ORF17_pER02	VGMAAVQLARHWGADVATASPAKWDTLRGLGLGDDRIASSRTLDFEETFRTATGGRGVD
AAF71776_mod05   NYST	VGMAAIQIARHVGAEVFATASEGKWDVLRSLGVADDHIASSRTLDFEAFAEVAGDRGLD
AAF71767_mod15   NYST	VGMAAIQIARHVGAEVFATASEGKWDVLRSLGVADDHIASSRTLDFEAFAEVAGDRGLD
	****:.*:*** **.*:*** .***.*.*.*.*:*****.* * .:.*.*.*
ORF17_pER02	VVLDSLAREFVDASLRLLPRGGRFVEMGKTDVRSPOQDVADAHPGVSYQAFDLTEAGLDRI
AAF71776_mod05   NYST	VVLNSLAGDFVDASMRLLDGGRFLEMGTDIRAADSVPD---GLSYQSFDLAWVVPETI
AAF71767_mod15   NYST	VVLNALSGEFVDASMRLLDGGRFLEMGTDIRAADSVPD---GLSYHSFDLGMVDPEHI
	***:.*: :*****:*** *****:*****:.*:.*.*.* *.*.*:*** . : *
ORF17_pER02	QEMLTELLTLFRSGALRPVPVSAWDLRQAPEAFRYLSQARHVKGIVLTLP
AAF71776_mod05   NYST	GTMLAELMDLFRGTALRPLPVRTWDVRHAKDAFRFMSMAKHIGKIVLTLP
AAF71767_mod15   NYST	QRMLLDLVELFDRGALAALPVRSDVRRAGEAFRFMSLAQHIGKIVLTV
	** :.*: ** *** .:*.*:***.*:*****.* *.*:*****.*

ORF10\_pKR01 PTGTVLVTGGTGVLGGRVARWLAGA-GAERLVLTSSRRGLDAPGAVELVEELTTGFGVEVS  
ORF10\_pKR02 PTGTVLVTGGTGVLGGRVARWLAGA-GAERLVLTSSRRGLDAPGTAEELVEELTS-SGVEVS  
ORF10\_pKR03 PSGTVLVTGATGTLGGLFARHLVTAYGVRLLLLSSRRGPEAEGAAELVAELEQ-LGAHVE  
ORF10\_pKR04 PTGTVLVTGGTGVLGGRVARWLAGA-GAERLVLTSSRRGPDAPGAELVEELTTGFGVEVS  
ORF10\_pKR05 PRGTVLVTGGTGAALGHVARWLAH-GAEHLVLTSSRRGPQAPGADALVAEIAA-LGAGAT  
ORF11\_pKR01 PAGTVLITGGSCTGAGTIVARHLATAHGVRLLLLSSRRGADAPGAGELTAEAG-LGAQVS  
ORF11\_pKR02 PRGTVLVTGCTGALGRHVARHLAER-GAERLVLTSSRRGADAPGAETEAELSA-FGAAVT  
ORF12\_pKR01 PGSTVLITGAGCMLGLLIARRLVAEHGVRLHLLVGRRGAAAPGAEQLSAELAE-AGASVT  
ORF12\_pKR02 PTGTVLVTGGTGVLGGRVARWLAGA-GAERLVLTSSRRGPDAPGAAELVEELTTGFGVEVS  
ORF12\_pKR03 PTGTVLVTGGTGVLGGRVARWLAGA-GAERLVLTSSRRGPDAPGAELVEELAG-SGVEVS  
ORF12\_pKR04 PRGTVLITGASGGLAGLFARHLVAEHGVRHLLLTSSRGAAAEAGAAQLADELVA-LGAQVT  
ORF13\_pKR01 PQGTVLVTGGTGAALGAHVARWLAWN-GAEHLLLTSSRRGPDAPGAALRDELTA-LGTQVT  
ORF14\_pKR01 TTGTALITGCTGALGRHVARWLART-GAQHLLLVSSRRGPEAEGADALAAELRA-LGA EVT  
ORF14\_pKR02 PGGTVLITGATGALGGLFARHLAAEHGVERLLLVGRRGADAPGAELVAELAE-SGTLAT  
ORF14\_pKR03 ADGTVLVTGASGTLGGLFARHLATHGARRHLLLTSSRRGDRAPGAGELTRELTE-AGVDVT  
ORF15\_pKR01 PDGTVLVTGASGTLGGLVARHLVTRGVRRLLLTSSRRGADAPGAGELAAELTG-LGA EVS  
ORF15\_pKR02 VDGTVLVTGASGTLGGLFARHLVVERGVRRLLLVSSRRGAAEAGAAELGAELTE-LGADVR  
ORF15\_pKR03 PEGTVLITGASGTLGGLLARHLVTEHGVRLHLLLTSSRGAAAEAGATQLADELVT-LGAQVT  
ORF16\_pKR01 PQGTVLVTGGTGAALGAHVARWLAEN-GAEHLLLTSSRRGPDAPGAALRDELTA-LGAQVT  
ORF16\_pKR02 PQGTVLVTGGTGAALGAHVARWLAEN-GAEHLLLTSSRRGPDAPGAALRDELTA-LGAQVT  
ORF17\_pKR01 PDGTALVTGATGTLGGLVARHLVAEHGVRHLLLTSSRRGAAAGAAELAAGLRE-LGA EVT  
ORF17\_pKR02 SDGTVLITGCTGTLGAVVARHAVTTRGARRLLLTSSRRGAAAGAAELAAELRE-LGA EVT  
ORF17\_pKR03 VDGTVLVTGASGTLGGLFARHLVVERGVRRLLLVSSRRGAAEAGAAELGAELTE-LGADVR  
ORF17\_pKR04 SDGTVLVTGASGTLGGLFARHLVVERGVRRLLLVSSRRGAAEAGAAELGAELTG-LGADVR  
ORF18\_pKR01 PDGTVLITGCTGSLGLARHLVVEHGVRLHLLLTSSRGAAAEAGAPELVAALAE-LGA ET  
ORF18\_pKR02

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ORF10_pKR01      VVACDAADRDLALRALLSAEAG-----SLTAVVHTAGVLDDGVLDALTPDRIDSVVRAKAV
ORF10_pKR02      VVACDAADRDLALRALLSSEAG-----SLTAVIHHTAGVLDDGVLDALTPDRIDGVVRAKAV
ORF10_pKR03      LVACDAADRDSALAALLGAVPSE-----HPLTAVVHTAGVLDDGILSSLTPERVAAVLRPKVD
ORF10_pKR04      VVACDAADRDLALRTLLESAEAG-----TLTAVIHHTAGVLDDGVLDALTPDRIDSVLRAKAV
ORF10_pKR05      AVACDVTDRTAVSELLAGLADGTYGPGLTAVFHHTAGAGQFAPLDGTGPGEVAEVVAAKVA
ORF11_pKR01      WAACDAGDRDLAALVLAAPVPA-----HPLTAVVHTAGVLDDGVIGSLTPERLDTVLRPAKAD
ORF11_pKR02      LVACDVADRDLALGTIVLARLAAD---GTPVRAVVHAAGVSQ-PPGTGTDLPGFARVVAAKTA
ORF12_pKR01      WAACDVADRDLASAVLHAIPAE-----HPLGAVVHTAGVLDDGVIASLTPERLSAVLRPKVD
ORF12_pKR02      IVACDAADRDLALRALLSAEAG-----TLTAVIHHTAGVLDDGVLDALTPDRIDSVLRAKAV
ORF12_pKR03      VVACDAADRDLALRALLSAEAG-----TLTAVIHHTAGVLDDGVLDALTPDRIDSVLRAKAV
ORF12_pKR04      WAACDVADRDLAALLASVPAAE-----QPLTAVVHTAAVLDDGVLDLTPERVDRVLRPKAE
ORF13_pKR01      IASCDMADRDAVTALIAAIPAD---QPLTAVIHAAAVVDDGVIELTAPQEVEAVLRVKVD
ORF14_pKR01      IAACDVADRDAVAALLATLPAE---HPLTNVVHAAGVLDDGVLDATPQRLAGVLRPKAH
ORF14_pKR02      WAACDVADRDLAALLADIPAE---HPLTAVVHTAGVLDDGVISLTPERLSAVLRPKVD
ORF14_pKR03      WAACDAADRDLAALVLAAPVPA---RPLTAVVHTAGVLDDGVIDSLTPERLDTVLRPKVD
ORF15_pKR01      WAACDAGDRDLAALVLAAPVPA---HPLTAVVHTAGVLDDGVIGSLTPERLDTVLRPKAD
ORF15_pKR02      WAACDVADREALESVLAGIPAE---YPLSGVVHTAGVLDDGVVSSSLTAERVSAVLRPKVD
ORF15_pKR03      WAACDAADRDLAALLAESVPA---HPLTAVVHTAGVLDDGVTSLETAGRMATVLRPKVD
ORF16_pKR01      IAACDVSDRDVAALIAAVPAD---QPLTAVVHTAAVLDDGVIELTPEQIERVLRVKVD
ORF16_pKR02      IATCDMADRDAVAALIAAVPAD---QPLTAVMHTAGVLDDGVIDALTPERFGTVLAPKAD
ORF17_pKR01      IAACDAADRDLAALIGSVPAE---HPLTAVVHTAGVLDDGVLEALTPERIDAVLPKVD
ORF17_pKR02      IAACDAADRDLAALIESIPSE---HPLTAVIHHTAGVLDDGVVDSLTPERLSTVLRPKVD
ORF17_pKR03      WAACDVADRDALEAVLAGIPAE---YPLSGVVHTAGVLDDGVVSSSLTPERLSAVLRPKVD
ORF17_pKR04      WAACDVADRDALESVLAGIPAE---YPLSGVVHTAGVLDDGVVSSSLTPERLSAVLRPKVD
ORF18_pKR01      WAACDVADREALESVLAGIPAE---YPLSGVVHTAGVLDDGVVSSSLTAERVSAVLRPKVD
ORF18_pKR02      VAACDAADRREALAALLAGIPAA---HPLTAVVHTAGRVDDGLLASLSPERIDTVLRPKVD

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# Figure 6b

ORF10_pKR01	SALNLHELTAELGIELSDFVLFS	SVTGTGVAAGQANYAAANAF	LDALAEQRRADGLAATS
ORF10_pKR02	SALNLHELTAELGIELSAFVLFS	MSGTVGTAGQANYAAANAY	LDALAEQRRADGLAATS
ORF10_pKR03	AAWNLHELTRREL--GLSAFVLFS	CAAAAFGAAGQGNAAAA	SFLEALAEQRRAEGLPATS
ORF10_pKR04	SAFNLHELTAELGIELSAFVLFS	MSGTVGAAGQANYAAANAY	LDALAEQRRADGLAATS
ORF10_pKR05	GAHLDELGLD--TELDAFVLFS	SIAGVWGS GGQSA YAAA	NAHLDALAQRRARGLTATS
ORF11_pKR01	AALHLHELTRDL--PLTAFVLFS	AIAGTLGSAGQANYAAANV	FLDALAQHRRHQDLPATS
ORF11_pKR02	GAVHLDALFDAP--DSLDAFVLFS	SIAGVWGS GGQGA YSA	NTFLDTLAERRRARGLAATA
ORF12_pKR01	AACNLHELTRHL--DLTAFVLFS	SIGGVFGGPGQGNAAAA	NVFLDALAQHRRSQGLAATS
ORF12_pKR02	SALNLHELTAELDIELSAFVLFS	MSGTVGAAGQANYAAANAF	LDALAEQRRADGLAATS
ORF12_pKR03	SALNLHELTAELGIELSAFVLFS	SVTGTWGTAGQANYAAANAY	LDALAEQRRADGLAATS
ORF12_pKR04	AALHLHELTKDL--DLSAFVLFS	AAAGTLGGAGQANYAAANV	FLDALARHRTARGLTALS
<b>ORF13_pKR01</b>	ATLILHELTRGL--DLSAFVLFS	SFAATFGAPGQGNQAPG	NAYLDAFAEYRRSGSLPATS
ORF14_pKR01	AAQVLHELTRDL--DLSAFVLFS	SVAAVFGAAGQANYAAANAS	LEALAEQRRADGLPATV
ORF14_pKR02	AAWNLHELTRGL--DLAAFVLFS	SSTSGLFGGPGQGNAAAA	SFLDALAQHRRAHGLPATS
ORF14_pKR03	AAWNLHELTEGH--ELSAFVLFS	SVAGCFGAAGQGNAAAA	NTFLDALAQHRRARGLTASS
ORF15_pKR01	AALHLHELTRDL--PLTAFVLFS	SAAGVFGAPGQGNAAAA	SFLDALAQYRRAHGLPGRS
ORF15_pKR02	AAWNLHELTRGL--DLSLFLVFS	SAAGVFGGAGQANYAAANV	FLDALAQHRRADGLAATS
ORF15_pKR03	AAWNLHELTHGL--DLAAFVLFS	SAAGVFGNAGQANYAAGN	TFLDALAQHRRAQGLTAVS
ORF16_pKR01	ATLHLHELTRREL--DLSAFVFFS	SFAATFGAPGQGNYPGN	AFDAFAEYRRASGLPATS
ORF16_pKR02	AALTTLHELTRREL--GLSAFVLFS	CVAGTLGDAGQGNAAAA	NSYLDALAEQRHADGLAATS
ORF17_pKR01	AAVHLHELTRREL--DLAAFVLFS	AAAGTLGGPGQANYAAAN	TFLDALAHRRRAEGLPATA
ORF17_pKR02	AAWNLHELTRHL--DLADFVLFS	SAAGTFGGAGQANYAAANV	FLDALARHRRHAHGLAATS
ORF17_pKR03	AAWNLHELTRGL--DLSLFLVFS	SAAGVFGGAGQANYAAANV	FLDALAQHRRAQGLAATS
ORF17_pKR04	AAWNLHELTRGL--DLSLFLVFS	SAAGVFGGAGQANYAAANV	FLDALAQHRRAQGLAATS
ORF18_pKR01	AAWNLHELTRGL--DLSLFLVFS	SAAGVFGGAGQANYAAANV	FLDALAQHRRAQGLAATS
ORF18_pKR02	AALHLHELTRGL--DLAAFVLFS	SAAGTLGNPGQANYAAANAF	LDALAQHRRRAAGLPAVS

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ORF10_pKR01	IAWGPWA--EGGMAAD--EAMDARMRREGMP	PMAPTSAMS	SALEQ
ORF10_pKR02	IAWGPWA--EGGMAAD--AALEARMRRDGV	PPMPADPA	IRALRQ
ORF10_pKR03	LAWGLWAPQTGGMAQQLDEVDLRR	IARDGVGGLSGDEGLGLFDT	
ORF10_pKR04	LAWGPWA--EGGMAGD--DAMDARMRREGL	PPMPADAA	TLRLQ
ORF10_pKR05	VAWGPWG--EGGLVAD--DEAAEQLRRRGL	PVMAPELS	IAALQQ
ORF11_pKR01	LAWGLWA--DASGMTGGLDEAQLRRME	QHGMGTLSAT	DGMALFDA
ORF11_pKR02	IAWGPWA--DGGMATE--GDAEEQLSRRGL	PPMDRATN	LALLER
ORF12_pKR01	LAWALWA--DSTGMAGSLDEADI	SRMRGGPLPLT	AEGLFIDL
ORF12_pKR02	LAWGPWA--EGGMAAD--AALEARMRRGGV	PPMDAELALS	SALRQ
ORF12_pKR03	IAWGPWA--EGGMAAD--AALEARMRRGGV	PPMKGEAAV	NALQR
ORF12_pKR04	LVWGMWA--EERGMAGRLTEAELGRAGR	GGVAPLSATE	GLALFDA
<b>ORF13_pKR01</b>	IAWGPWG--SADGDDS--AAGDRMRRHGI	IVMSPERT	TLVSLQH
ORF14_pKR01	LAWGAWA--EGGMATD--ELVAERLRLAGL	PALAPELALS	SALHR
ORF14_pKR02	TAWGLWS--VADGMAGALDAADVNRMR	RAGLPPLTA	ADGLGLFDT
ORF14_pKR03	LAWGLWE--TTDGMAGALDEADL	TRMARSGVAAL	APDEGLALFDT
ORF15_pKR01	LAWGLWE--DAEGMAGALDRADL	DRMKRGVHGLT	ASEGLALLDL
ORF15_pKR02	LAWGLWA--EPGGMAGALDADDV	SRLGRGGV	SGLSAGEGVALFDA
ORF15_pKR03	LAWGLWD--DEAGMAATLDEQDRRL	SRGSMNPLS	VAEGLALFDA
ORF16_pKR01	IAWGPWG--DGGMAEG--AVGDRMRRH	GVIEMSPER	AVAAALQH
ORF16_pKR02	VAWGRWG--DSGLAAGG--AIGERLDR	GGVPAMAPR	SAIRALQL
ORF17_pKR01	LAWGLWA--ERSGMTGDLADADLER	ISRAGVAAL	SSAEGLALLDT
ORF17_pKR02	LAWGLWA--EASGMTGELDTADKDR	MTRSGVLGLS	SSEEGVALLD
ORF17_pKR03	LAWGLWA--GVGGMGELTESDRER	INRGGITALE	PETGLALFDA
ORF17_pKR04	LAWGLWA--EPGGMAGALDADDV	SRLGRGGV	SGLSAQEGVALFDA
ORF18_pKR01	LAWGLWD--EPGGMAGALDADDV	SRLGRGGV	SGLSAGEGVALFDA
ORF18_pKR02	LAWGLWE--QRSAMTGALSDADVQ	RMARAGLAP	LSAEGLALFDT

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## Figure 7

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ORF10_pac00    SAALRDAAPDTLDPHRPFLDLGFDLSAAVDLHARLVAGTGLRLPVTLAFDHPTPAHLARHLL
ORF10_pac01    AAVLGHGDGSDAUGAERAFKELGFDLSLTSVELRNRLGAATDLRLPRTLVDYDPTSALAAYEYL
ORF10_pac02    AAVLGHAUVENVGAGRAFKELGFDLSMAVELNRNIGSATELRPATLIYDHPTSAALAEFLR
ORF10_pac03    AEVLGHTDARAADVADRFKELGFDLSLTAVELRNVLKAATGLRLSPTLVFDYPTPVALARHLL
ORF10_pac04    AAVLGHGGSEAVGAERAFKELGFDLSLTAVELRNRLGAATGVRLPATLIFDYPTATALAAYLR
ORF10_pac05    AVVLGHGGATAVEAARAFKELGFDLSLTAVELRNRLSTATGLRLPASLVFDYPTPALAAHIR
ORF11_pac01    ASVLGHSASAEQVDPARAFKDLGFDLSLTAVELRNRLGAATGLRLPRTLVDHPTPALVRHRL
ORF11_pac02    ATALGHTSADAVAARAFKDLGFDLSLTAVELRNRLGAACGLRLPSSLVFDYPNPQALTRHLL
ORF12_pac01    AAALGYPGPSAVEPGRSFKEFGFDLSLTAVELRNLLGDATGRRLPATLVFDYPTATALAGYLR
ORF12_pac02    AEVLGHSGAEDIAGRAFREIGFDLSLTAVELRNRLGAAAELRLPATLVYDYPPTAALAVHLR
ORF12_pac03    AAVLGHAUVESIGAARAFKELGFDLSLTAVELRNRLGAVTGRLPATLIYDYPTSGALAEYLR
ORF12_pac04    AAVLYGSAEHIGEQAFAFKELGFDLSLTAVELRNRLGAAGGLRLPATLIYDYPNPAALAQHLL
ORF13_pac01    AAVLGHADLAAVEAGRAFKELGFDLSLTSVELRNRLGAVSGLKLPAVLVFDHPTPAVA AFLR
ORF14_pac01    AAVLGYAGPESVDPGSADFRLGFDLSLTAVEIRNLLTSRTGLRLPATLIFDYPNSLSLAAFLO
ORF14_pac02    AAVLGHAUPEAVESGRAFKELGFDLSLTAVELNRNLNAATALRLPATLIFYDDPTLARYLRL
ORF14_pac03    AAVLGYAGPDVDVAARGFLDLGFDLSLTAVDLRNRLTASAGRLPVTLIFYDYPSPITALAAYLA
ORF15_pac01    ADVLGHGSPDAIDPEQAFSELGFDLSLTAVELRNRLGAAIGRRLPATLIFDHPASTLARHLS
ORF15_pac02    AAVLGYASPEAVEKDSSFRELGFDLSLTAVELRNLLGAATGLRLPATLVFDYDPTS AVLADHLR
ORF15_pac03    AQVLGHSGAAAIPEGSAFKELGFDLSLTAVELNRNLGAVTGRLRPATLIFYDPTPEALSGHLR
ORF16_pac01    AAVLGYAGPDVAEAGRAFKELGFDLSLTSVELNRNLNAASGLKLPPTLVFDHPTPTVLARHLR
ORF16_pac02    ATALGHPTTDEVGAGRAFKELGFDLSLIAELNRNLNAATGLRLPATLVFDHPTPTILAEFLR
ORF17_pac01    AAVLGYPGPEAVDPGRAFKELGFDLSLTAVELNRNLGSATGVRLPATLVFDYDPTPNALSAFLR
ORF17_pac02    AAVLGHAUPEAVETPAFKDLGFDLSLTAVEFRNRLGATTAGIRLPATLVFDYPTPTVLAGYLK
ORF17_pac03    AAVLGHAUDEVPADRAFKELGFDLSLTSVELNRNLGATTGERLSATLVFDYPTPHALAEFLR
ORF17_pac04    AAVLGFAGPEAVDPARSFSEVGFDLSLTAVELNRNLGAATGVRLPATLVFDYPTPDALVEYLR
ORF18_pac01    AAVLGLAGPEAVDPARSFSEVGFDLSLTAVELNRNLGAATGVRLPATLVFDYPTSLALADFLG
ORF18_pac02    AAVLAYPSPDVAGSEQSEFLELGLDSLTAVELNRNLNAATGLRLPATLVFDHPTPALVAERLR
```

# Figure 8

ORF18_pTE02 AAF71777 NYST	---RGDTRPGLVCFSSILSISG-----PHQ-----YARFASAFRGRRDVHALGAPG--F MTTSTEESLWARCFHPAPAAPVRLFCFPHAGGSASFYFPVSAQLSSVAEVFAIQYPGRQD :          **  .  :  .          **          *  .:  :  .  :  *:  *:  **
ORF18_pTE02 AAF71777 NYST	LRGEQLPSATDAVIEAQAEAVLRHADGAPFVLLGHSSCGMLAHAVAGRLESEG----- RRKEAGVSDLATLADQVYDALRPLLKERPSTFFGHSMGATLAFEVARRFEADDGDLVRLF * * *  .:  :  :  *:  .  *  .:  **  *  .  **  **  *:  *:  .
ORF18_pTE02 AAF71777 NYST	----VFPQALVMIDIYSHDDDAIIGIQPGLSEGMDERQDTYVPVDDNRLLAMGAYFRLFG ASGRRAPSRVREEAVHRRSDDGIVEELK-LLAGTNTALLGDEEILRMILPAIRSDYQAIE * . :  .:  :  **  *:  *  *  :  .  :  *  *:  :  :  :
ORF18_pTE02 AAF71777 NYST	GWK--PEVVKTPTLLVRAGERFFDWTRSTDGDWRSYWDLDHTALDVPGNHFTMEEHAPT TYRCPPDVTVRAPLTVLTGDRDPKTSLDEAEAWRGHTTGDFDLKVLPGGHF-FVSSEAPA .:  *:  .  ..*  *  *:  *  .  :  .  **  .:  *  .:  **  *  :  :  :  *:  :
ORF18_pTE02 AAF71777 NYST	TAQAVEGWLDTTG IIDLLRAHLAGNG :  :  .  *  .*



# Figure 9

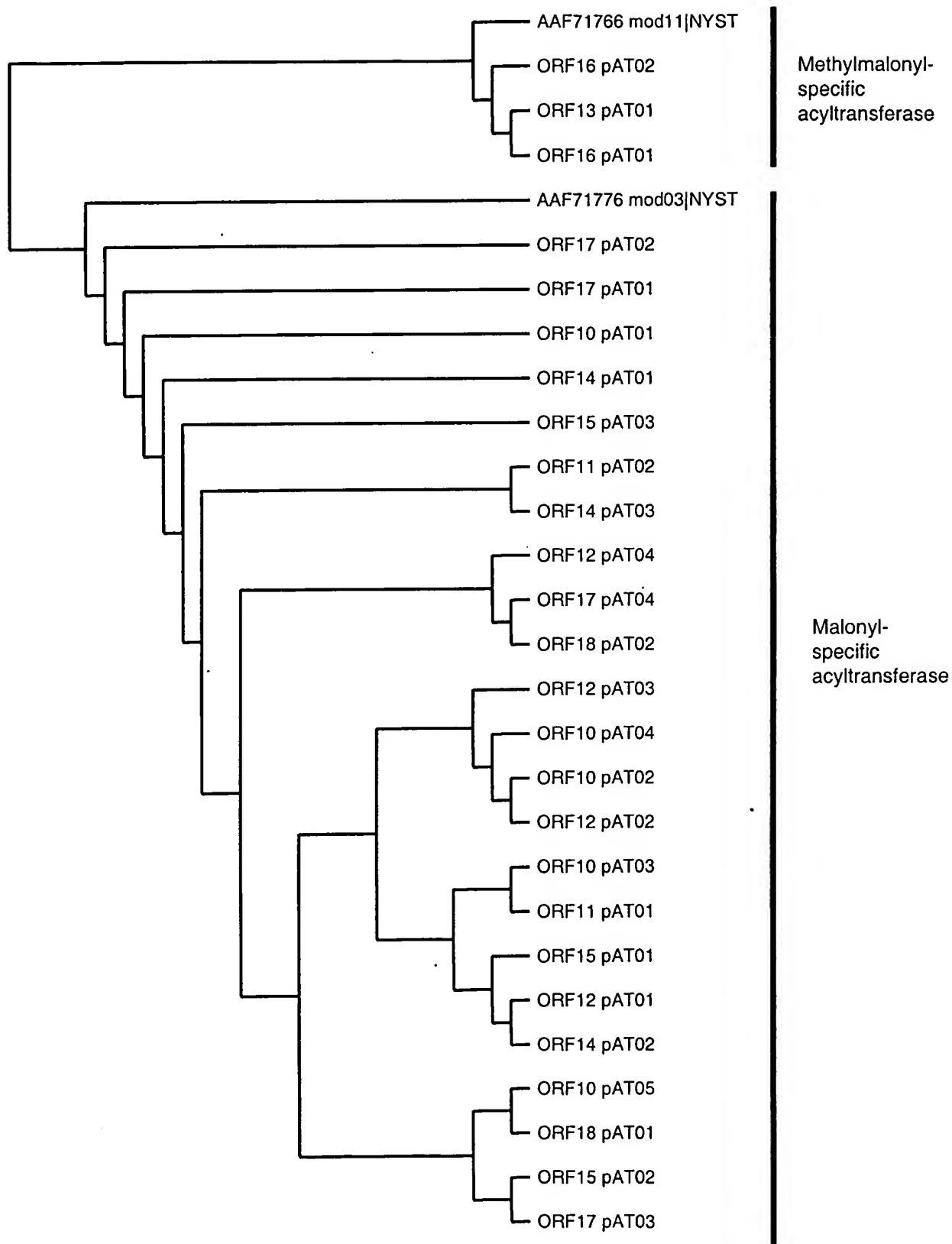
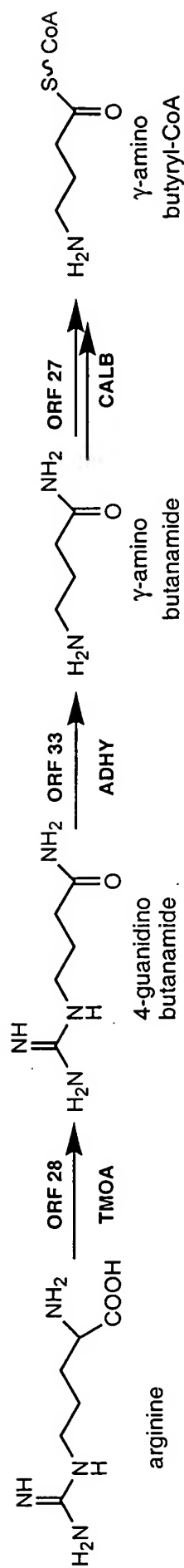
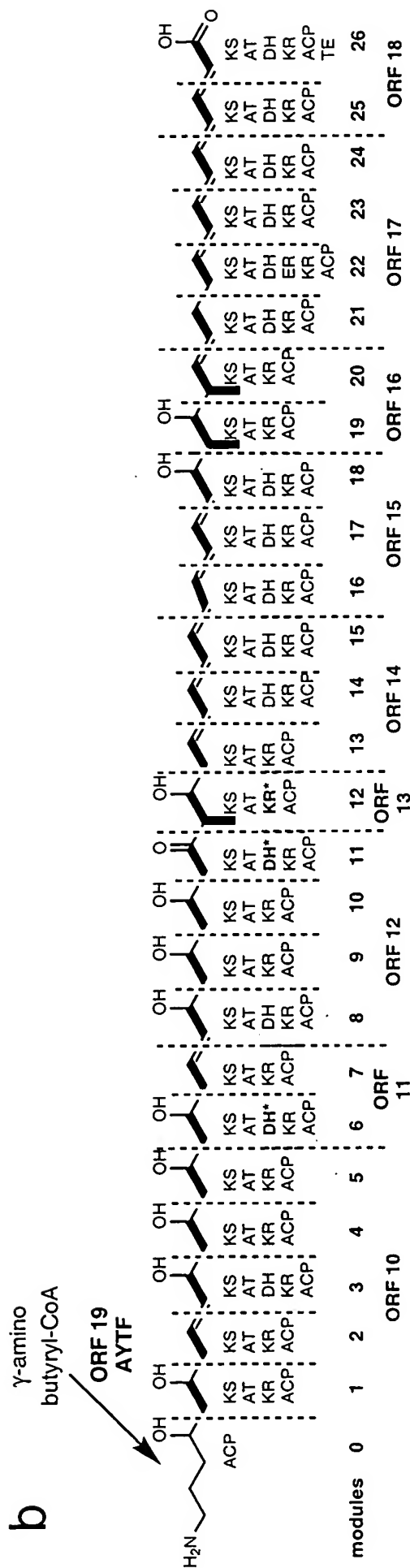


Figure 10

a



b



c

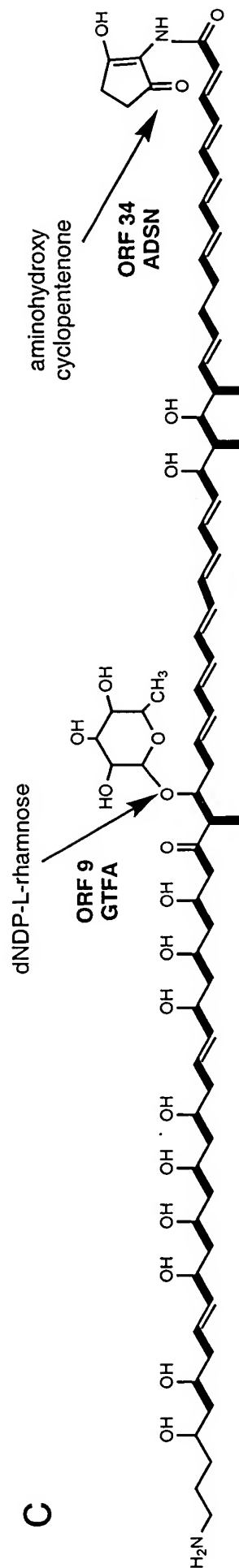
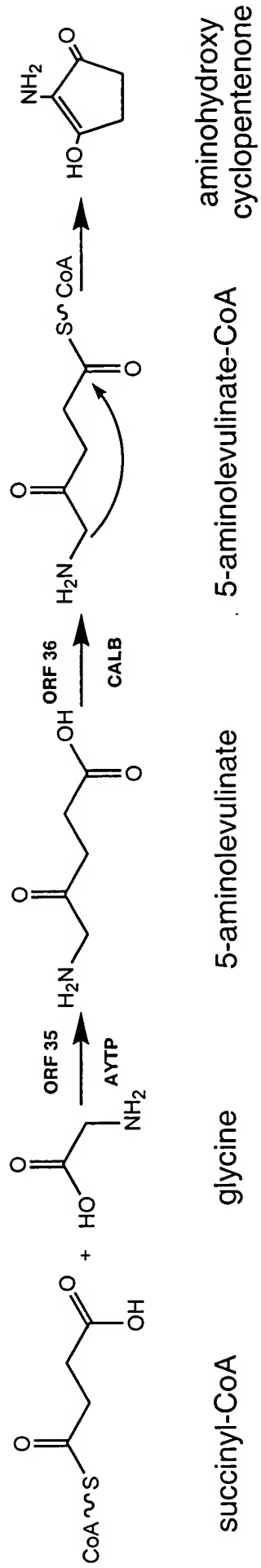


Figure 11

a



b

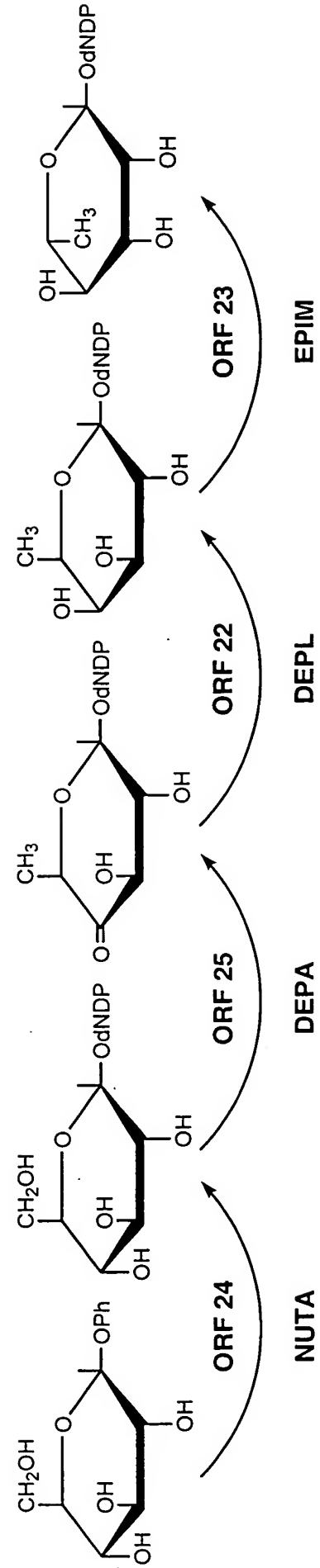


Figure 12a

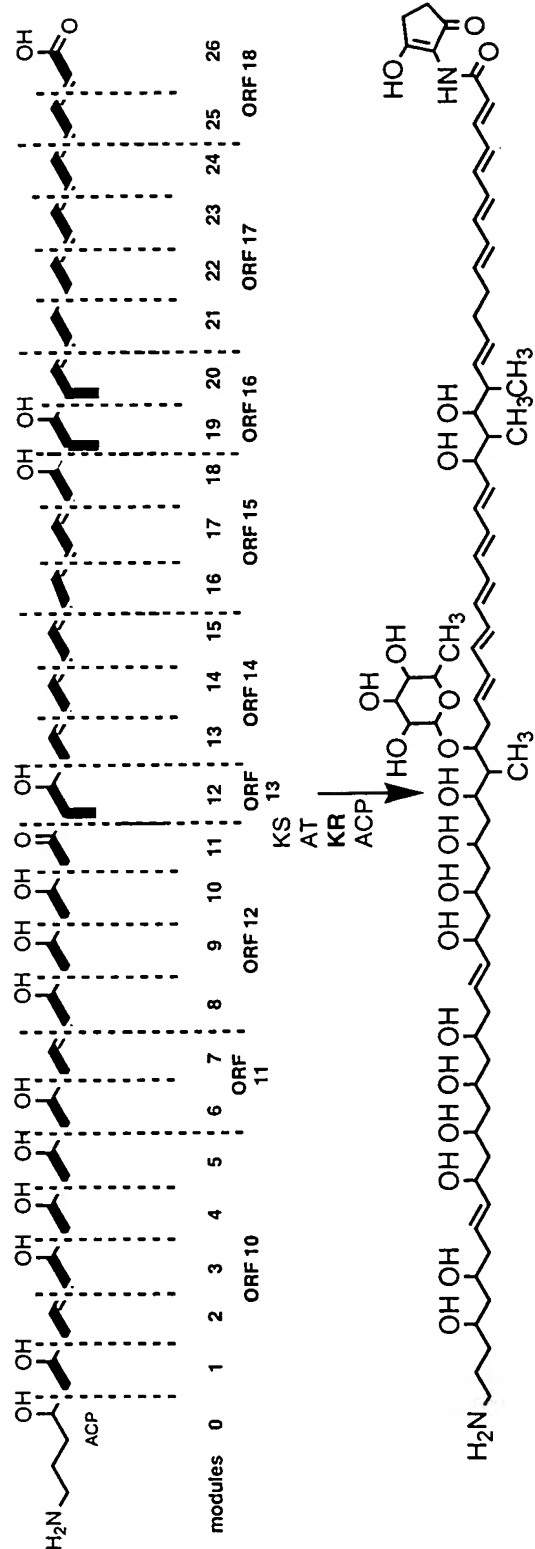


Figure 12b

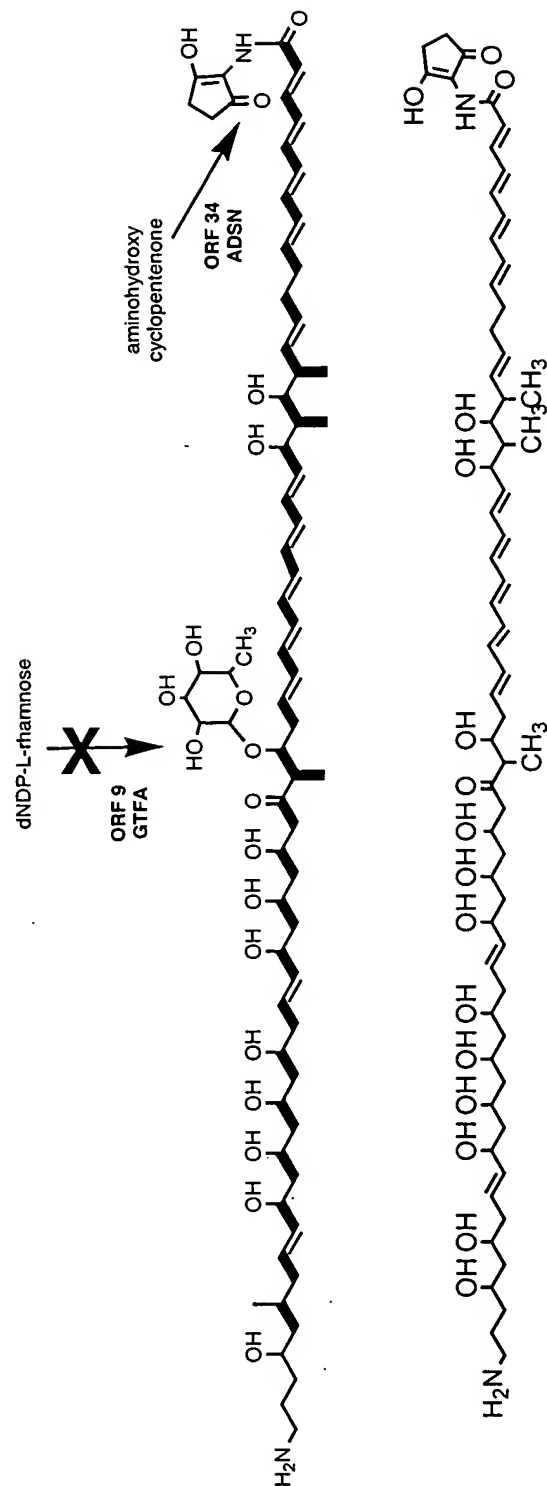


Figure 12c

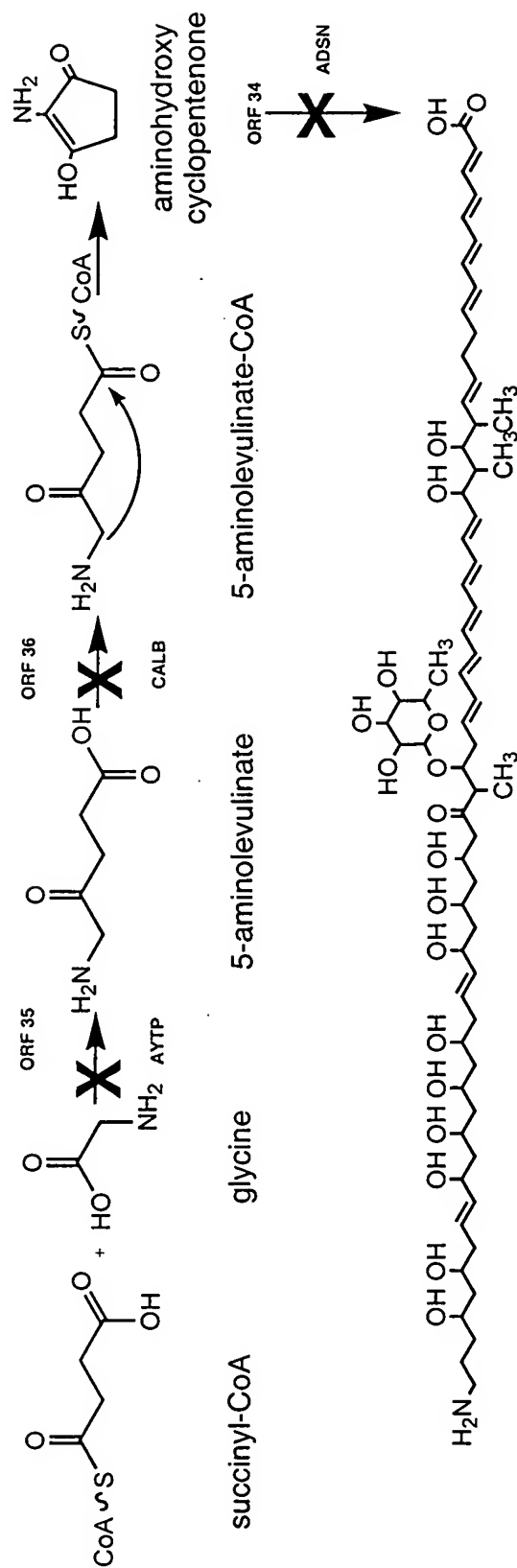


Figure 12d

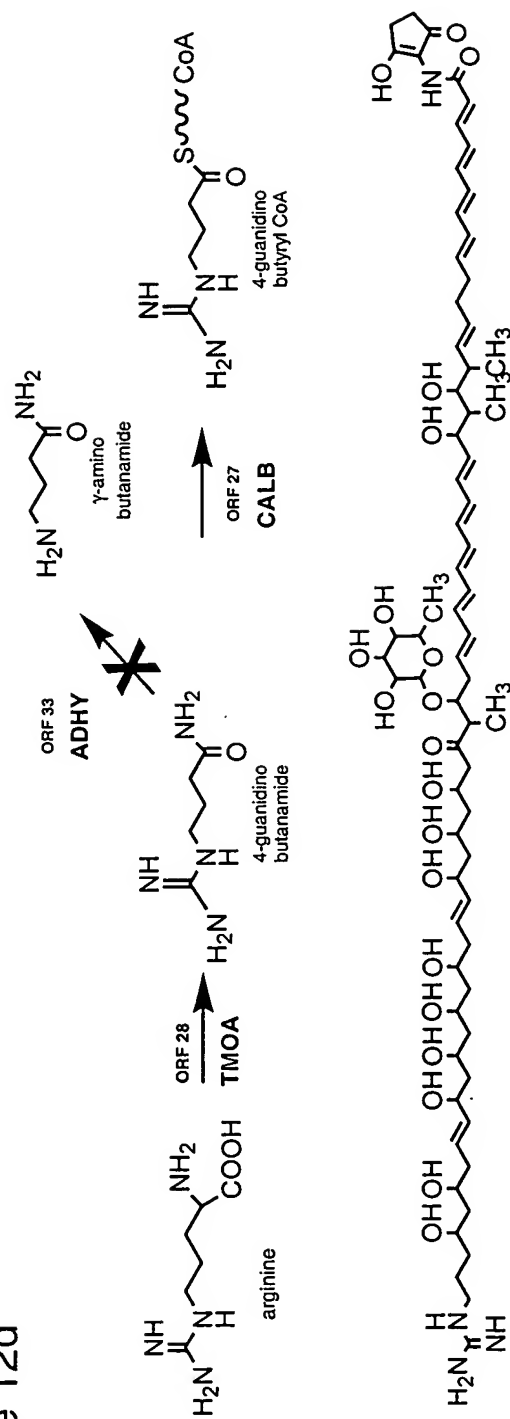


Figure 12e

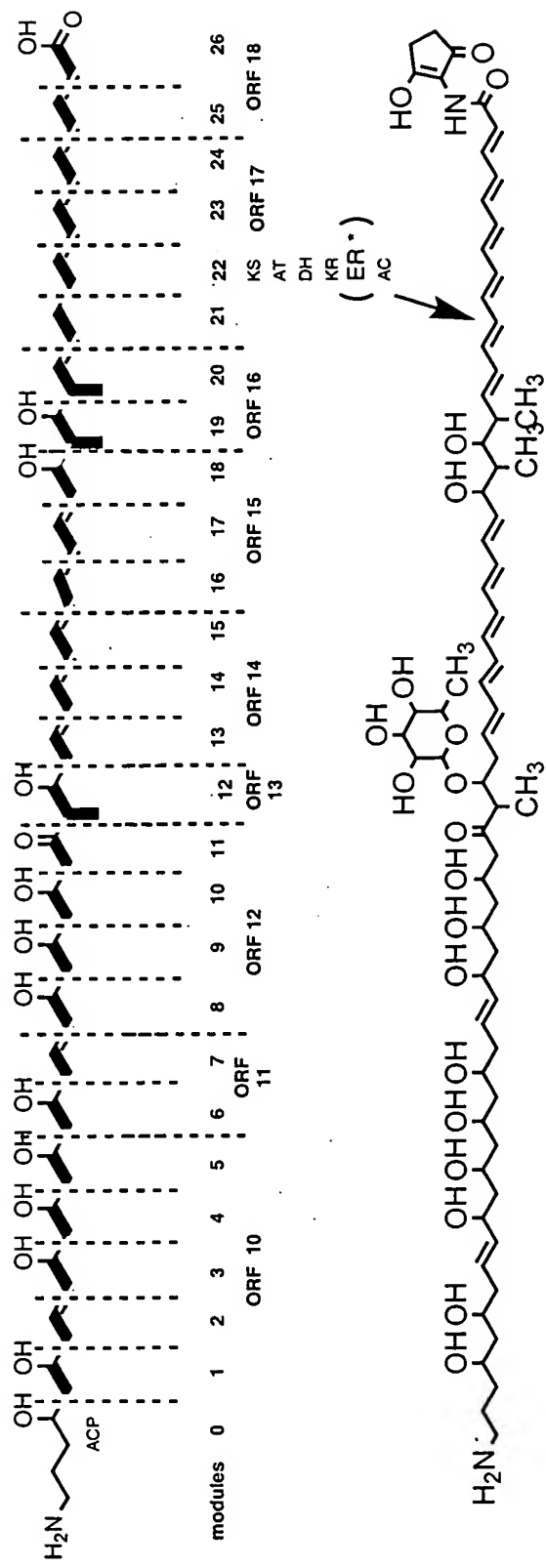
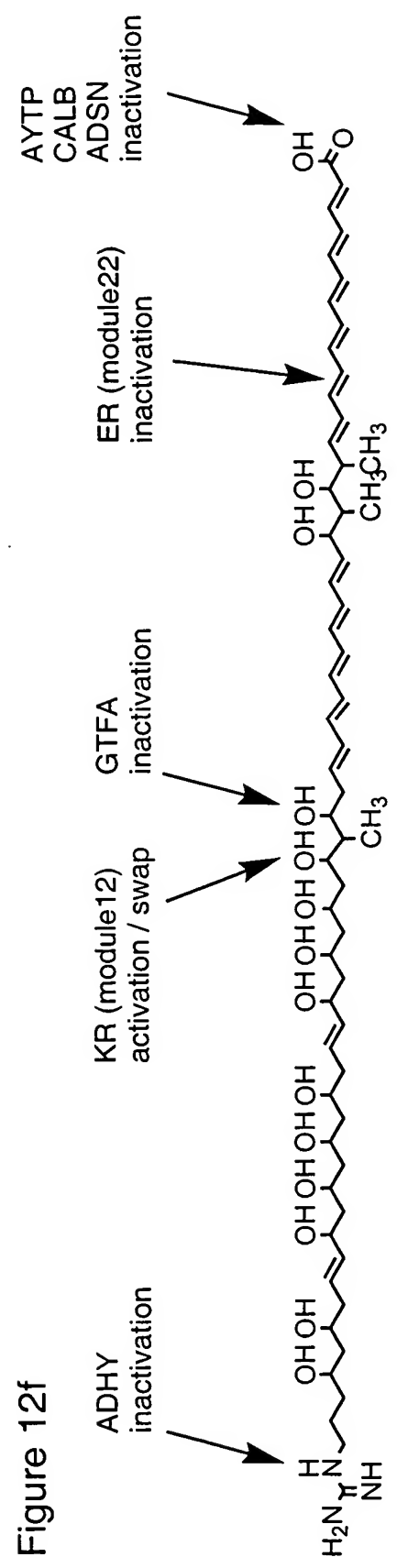


Figure 12f



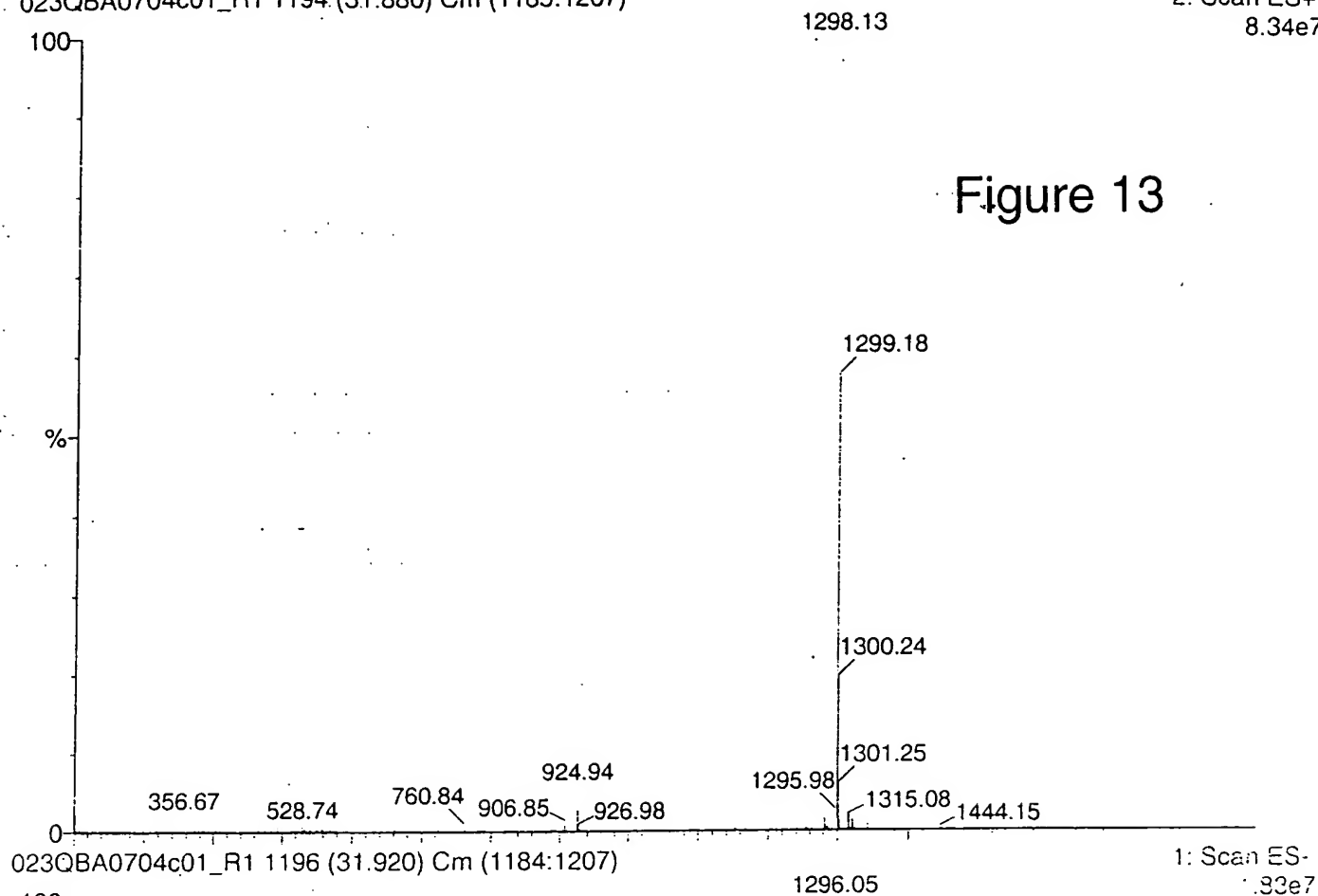
023X04QB1\_R1

023QBA0704c01\_R1 1194 (31.880) Cm (1185:1207)

2: Scan ES+

8.34e7

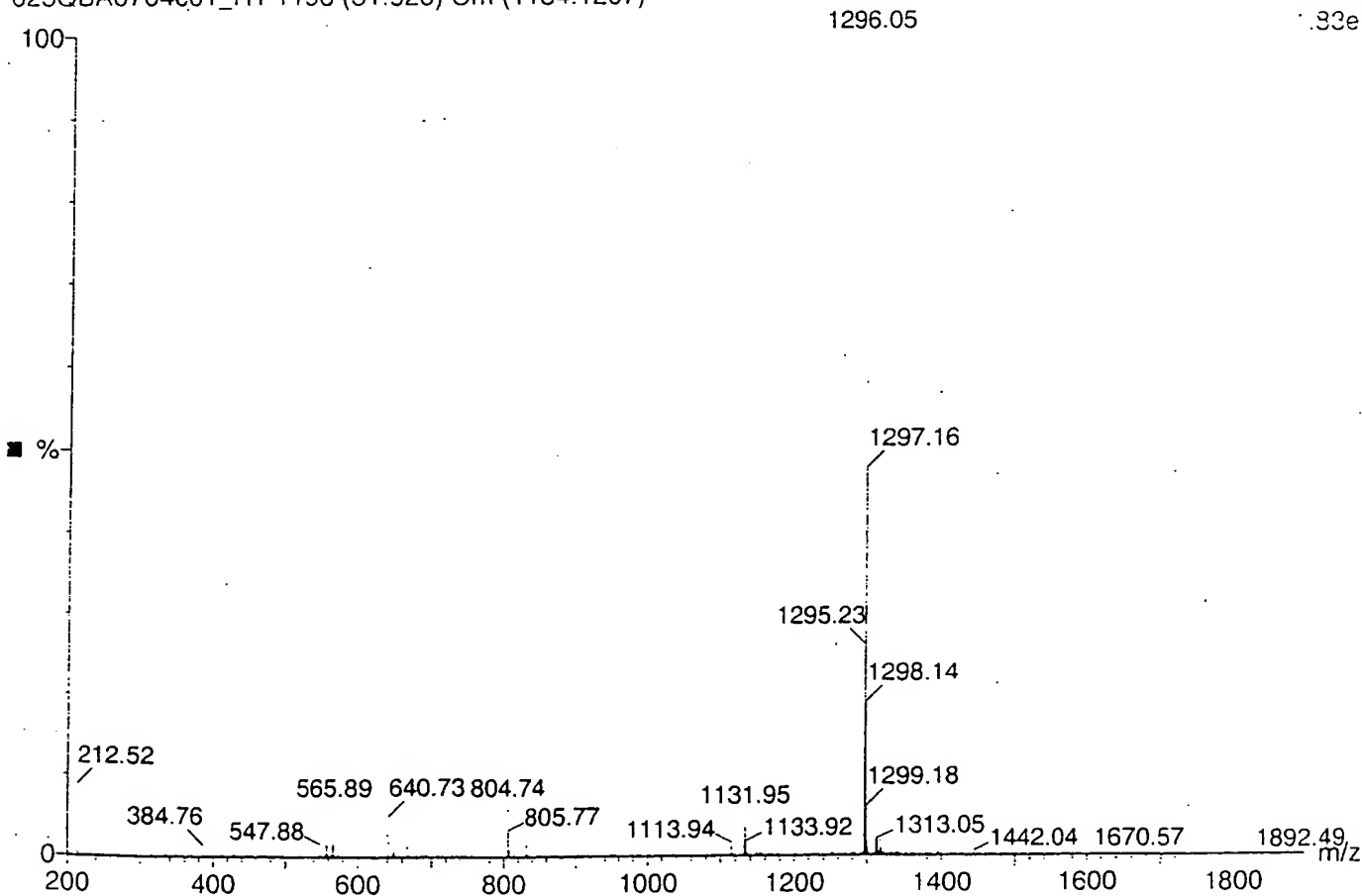
Figure 13



023QBA0704c01\_R1 1196 (31.920) Cm (1184:1207)

1: Scan ES-

8.33e7



023X04QB1\_R1

023QBA0704c01\_R1 1922 (32.135)

3: Diode Array  
2.10e6

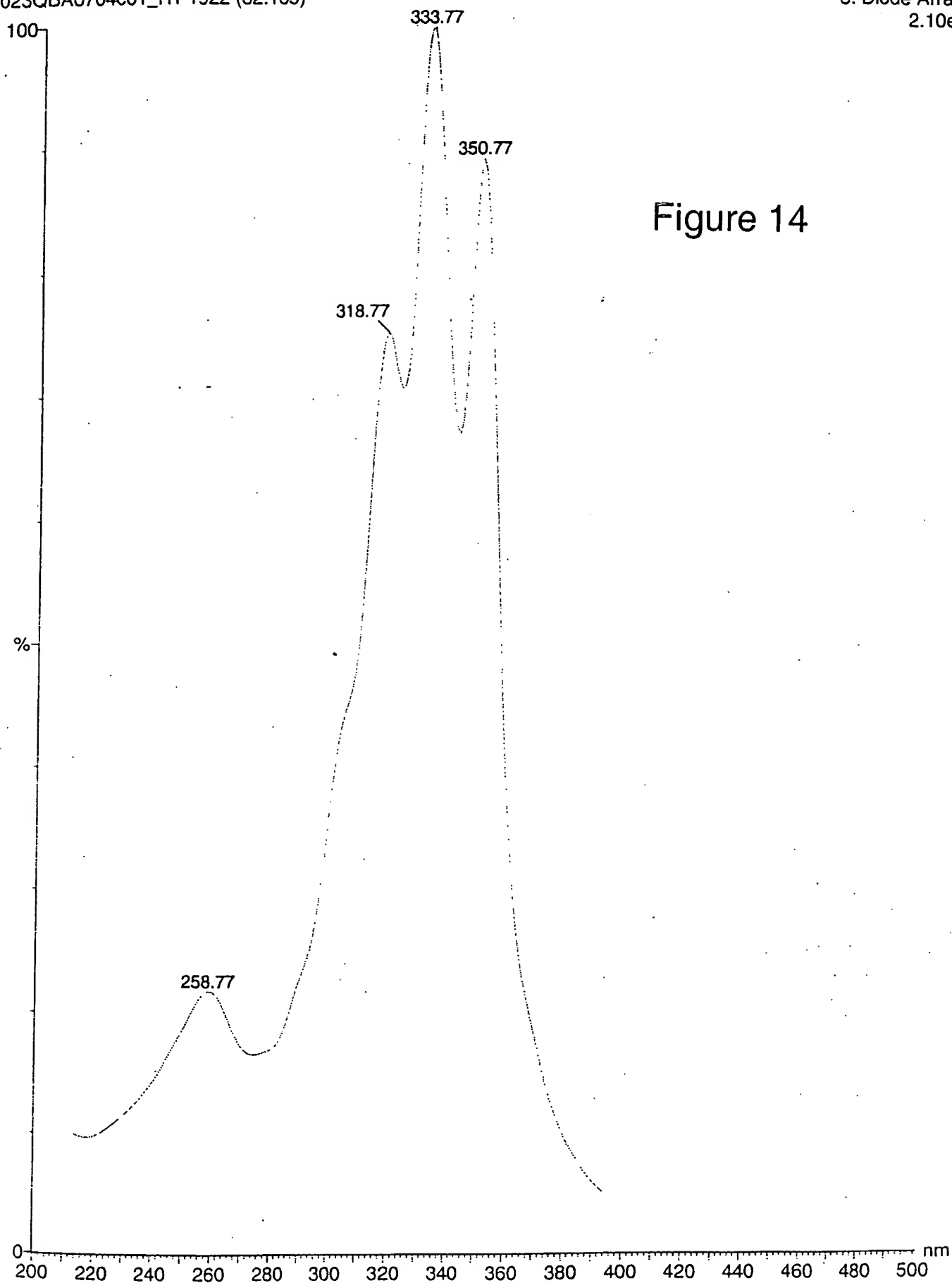


Figure 14



ECO02301\_proton\_MeOH\_spinning

exp2 s2pul

```

SAMPLE
date Sep 24 2002 dfrq DEC. & VT
solvent CD300 dn 125.674
file /export/home/~dpr C13
nmr1/ECO02301/ECO~dof 30
02301_MeOH_proton~dm 0 nnn
spinning.fid dm c
ACQUISITION dmf 200
sfrq 499.752 dseq
tn 1.892 H1 dres 1.0
at 30272 homo n
np 8000.0 wfile PROCESSING
fb not used proc ft
bs 32 fn not used f
tpwr 59 math
dl 5.5 werr
nt 0 wexp
ct 32 wbs
gain 26 wnt
alock n wft
gain 26
ll n
ln n
dp y
hs nn
DISPLAY
sp -122.1
wp 3836.9
vs 5471
sc 0
wc 250
hzmm 15.35
ls 7547.31
rfi 1509.3
rfp 0
th 5
lms 3.000
nm cdc ph
```

Figure 15a

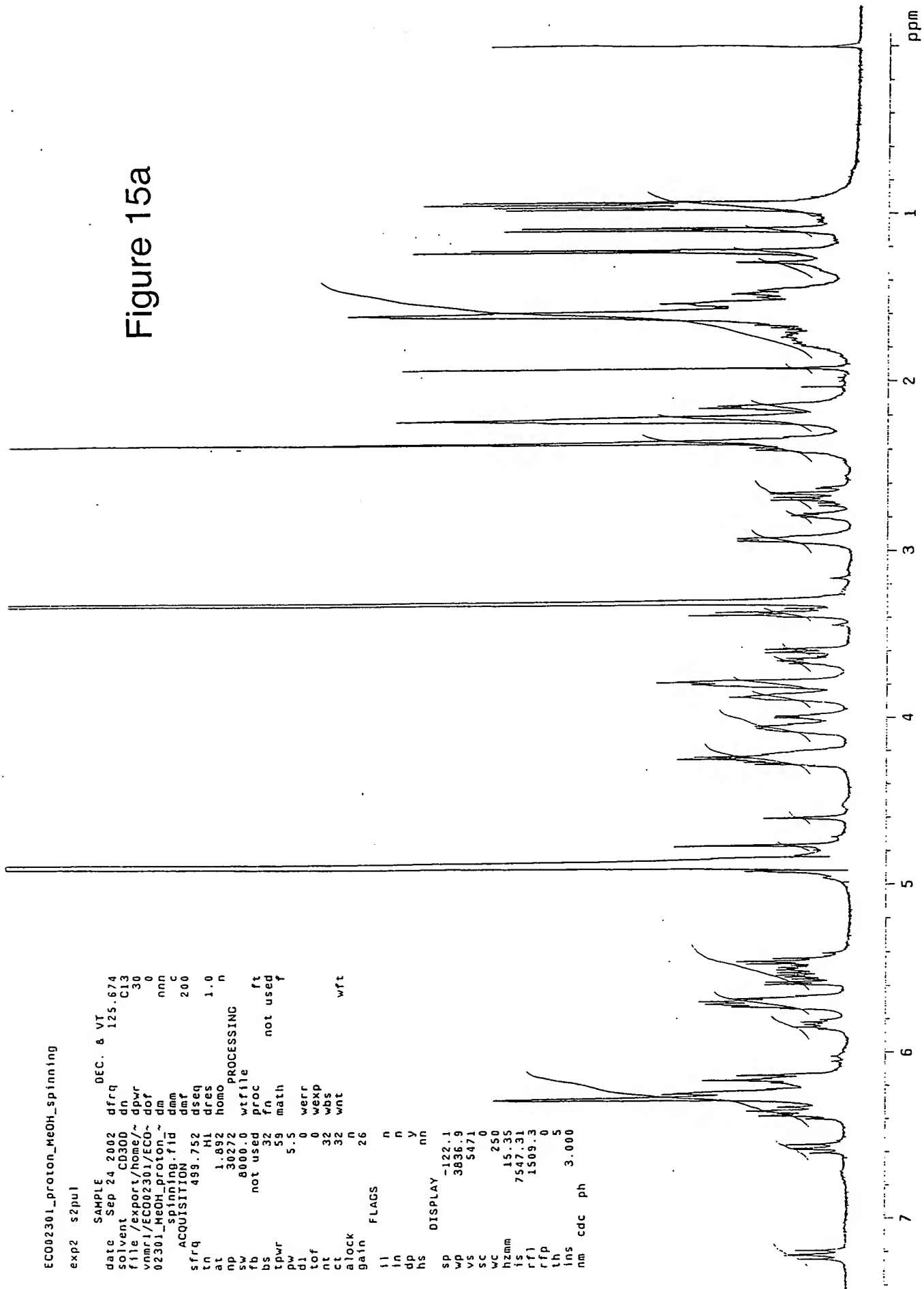
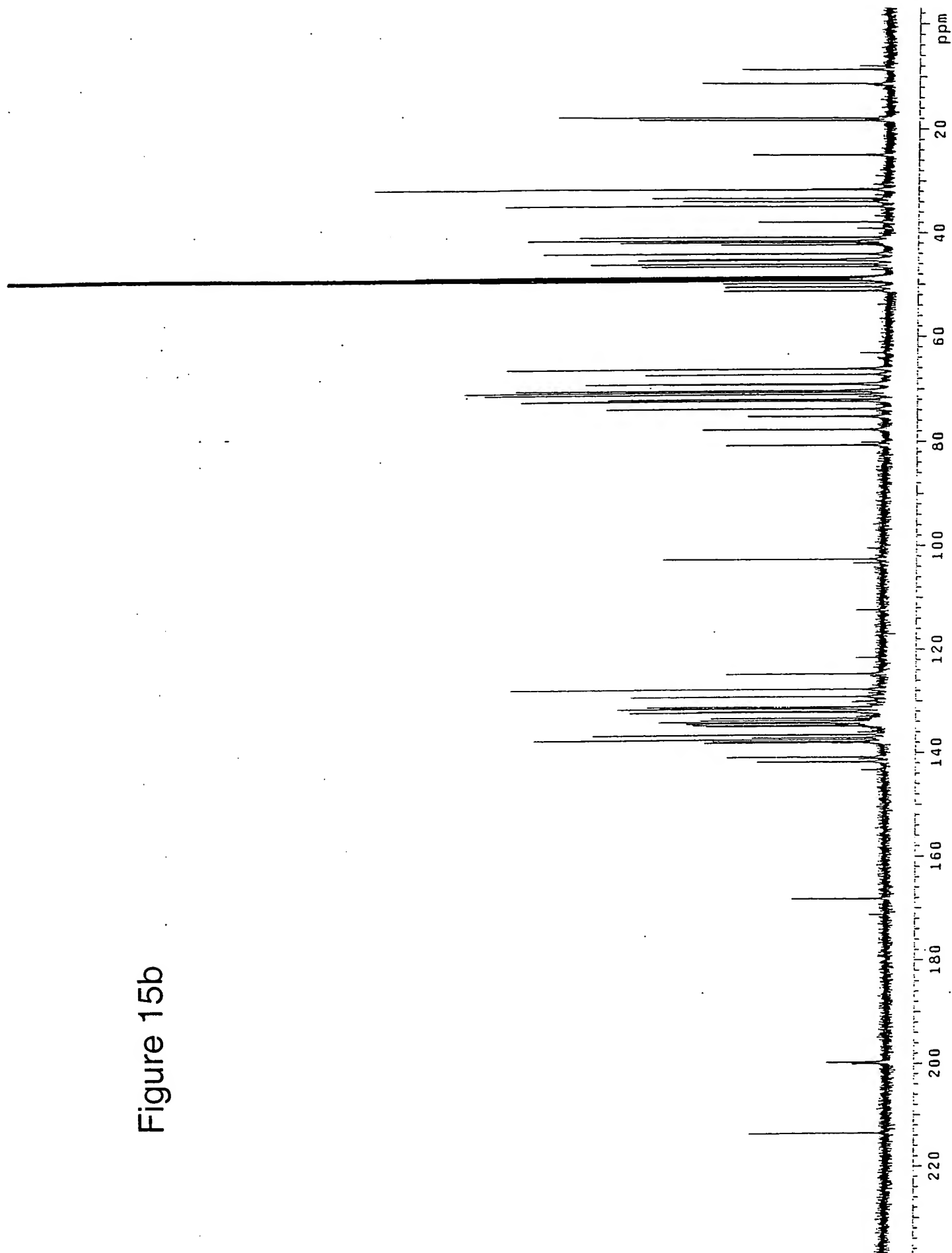


Figure 15b

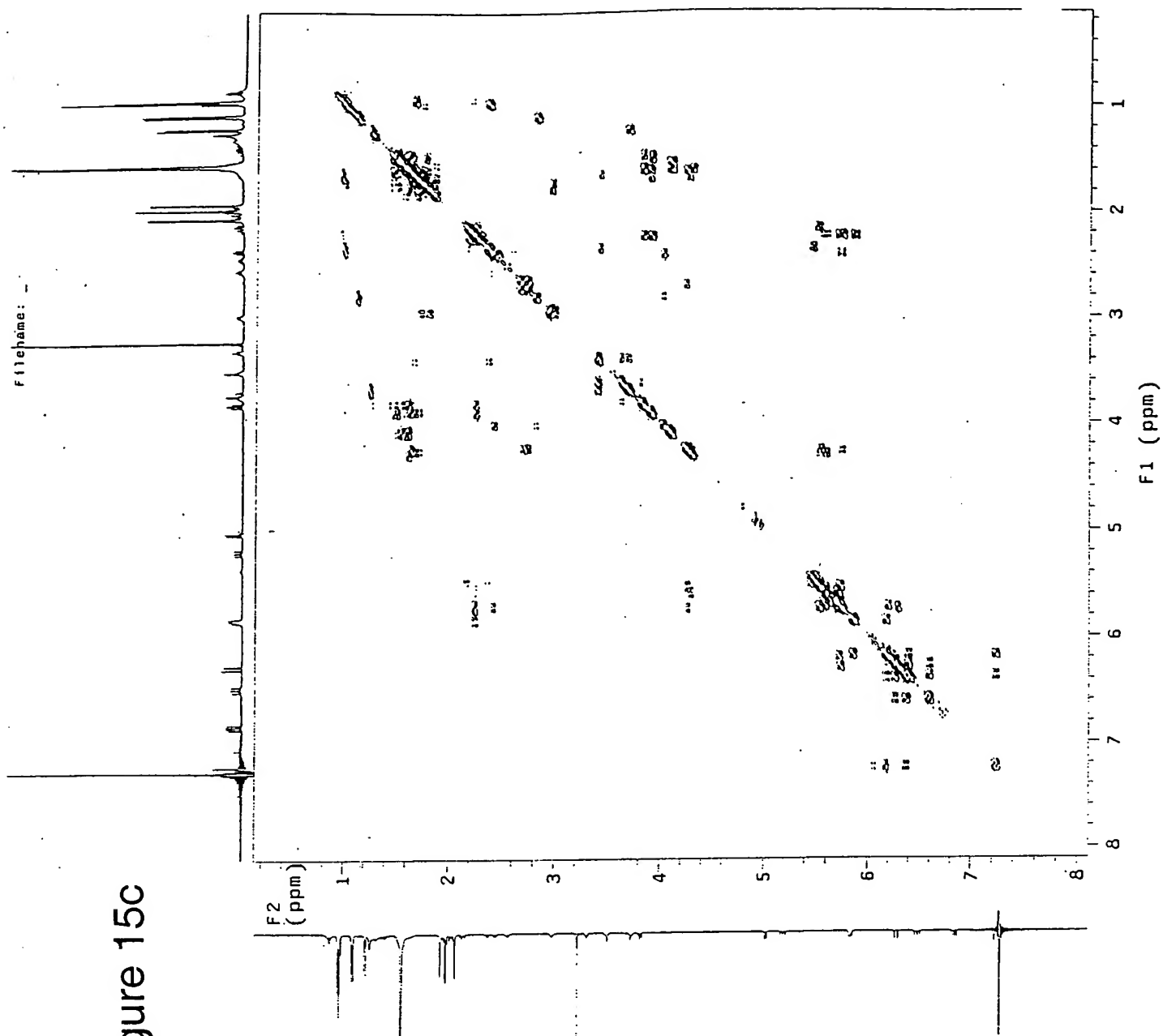


# STANDARD PROTON PARAMETERS

Pulse Sequence: gDQCOSY  
 Solvent: CD300  
 Ambient temperature  
 File: ECO\_02301-gDQCOSY\_CD300\_high\_res  
 INOVA-500 "resonance"

Relax. delay 1.000 sec  
 Acq. time 0.128 sec  
 Width 3988.0 Hz  
 2D Width 3988.0 Hz  
 32 repetitions  
 2 x 500 increments  
 OBSERVE H1, 499.7495714 MHz  
 DATA PROCESSING  
 Sg. sine bell 0.096 sec  
 Shifted by -0.064 sec  
 F1 DATA PROCESSING  
 Sg. sine bell 0.037 sec  
 Shifted by -0.025 sec  
 FT size 8192 x 8192  
 Total time 10 hr, 48 min, 6 sec

Figure 15c

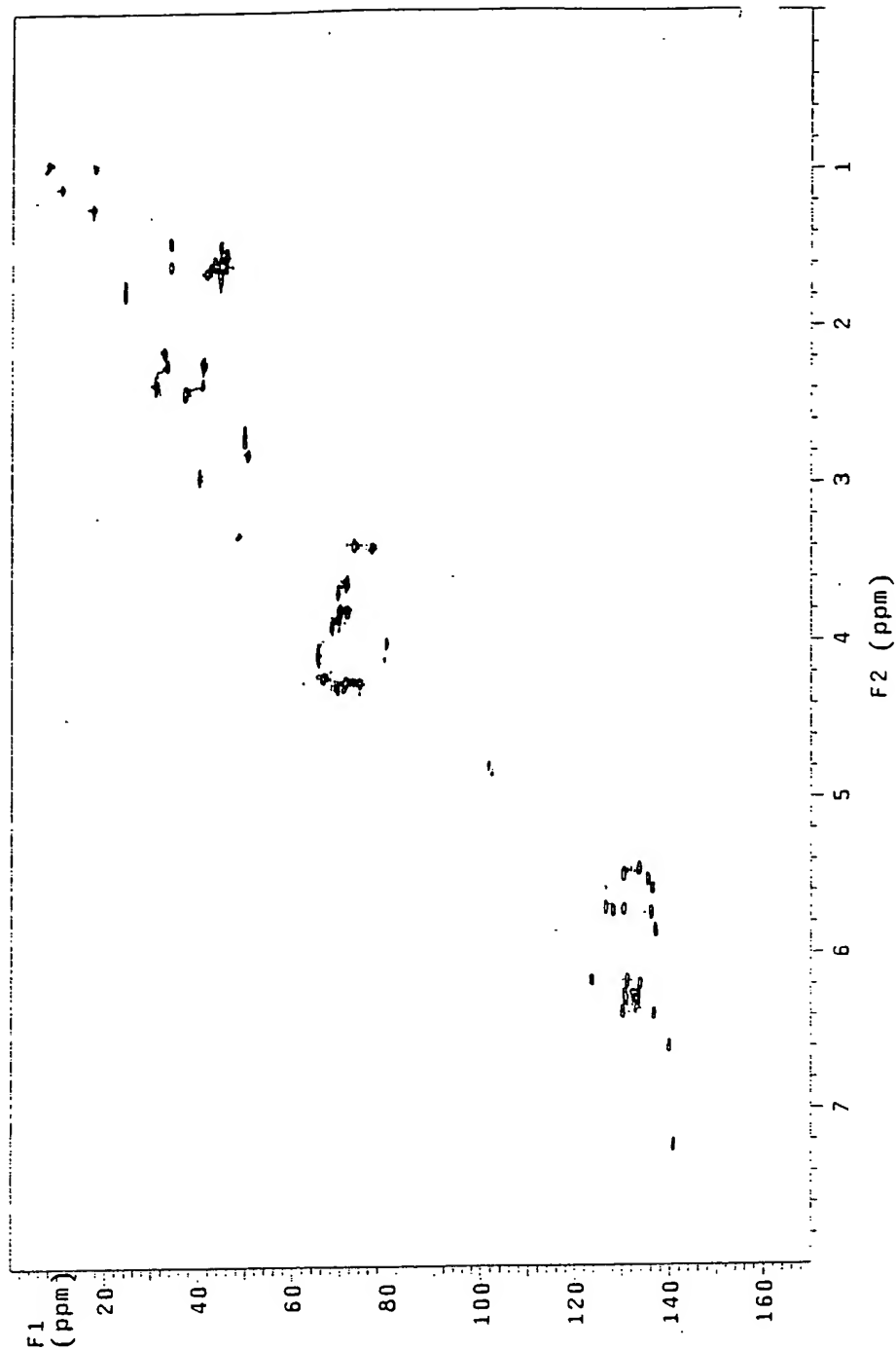


Filename: -

# STANDARD PROTON PARAMETERS

Pulse Sequence: ghsqc  
Solvent: CD3OD  
Ambient temperature  
File: ECO-02301\_CD3OD\_ghsqc\_12\_02  
INNOVA-500 "resonance"  
Relax. delay 1.000 sec  
Acq. time 0.128 sec  
Width 4001.6 Hz  
2D Width 21361.6 Hz  
64 repetitions  
2 x 128 increments  
OBSERVE H1, 499.7495714 MHz  
DECOUPLE C13, 125.6727810 MHz  
Power 40 dB  
on during acquisition  
off during delay  
V40 1d4719 modulated  
DATA-PROCESSING  
Gauss apodization 0.059 sec  
F1 DATA PROCESSING  
Gauss apodization 0.022 sec  
FT size 2048 x 2048  
Total time 5 hr, 28 min, 9 sec

Figure 15d

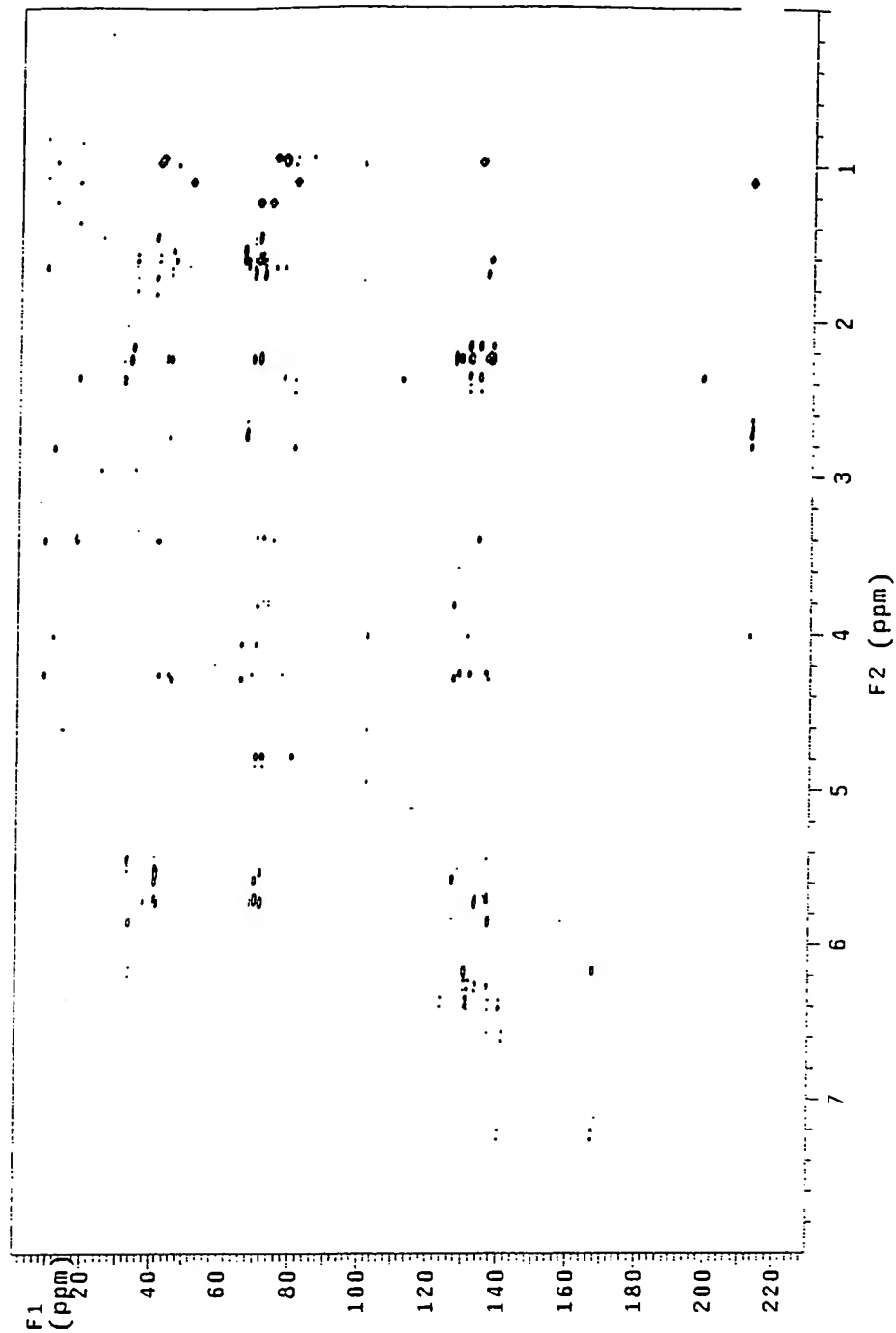


# STANDARD PROTON PARAMETERS

Pulse Sequence: gHMBC  
 Solvent: CD300  
 Ambient temperature  
 File: ECD02301\_CD300\_gHMBC\_12\_02  
 INOVA-500 "resonance"  
 Relax. delay 1.000 sec  
 Acq. time 0.128 sec  
 Width 4001.6 Hz  
 20 Width 28901.7 Hz  
 128 repetitions  
 400 increments  
 OBSERVE H1, 499.7495714 MHz  
 DATA PROCESSING  
 Sine bell 0.064 sec  
 F1 DATA PROCESSING  
 Sine bell 0.007 sec  
 FT size 2048 x 4096  
 Total time 17 hr, 18 min, 49 sec

Filename: --

Figure 15e



# STANDARD PROTON PARAMETERS

Pulse Sequence: TOCSY  
 Solvent: CD300  
 Ambient temperature  
 File: 02301\_CD300\_TOCSY\_mix\_08  
 INOVA-500 "resonance"  
 Relax. delay 1.000 sec  
 Mixing 0.080 sec  
 Acq. time 0.128 sec  
 Width 4001.6 Hz  
 2D Width 4001.6 Hz  
 32 repetitions  
 2 x 200 increments  
 OBSERVE H1, 499.7495714 MHz  
 DATA PROCESSING  
 Gauss apodization 0.059 sec  
 F1 DATA PROCESSING  
 Gauss apodization 0.046 sec  
 FT size 2048 x 2048  
 Total time 4 hr, 29 min, 30 sec

Figure 15f

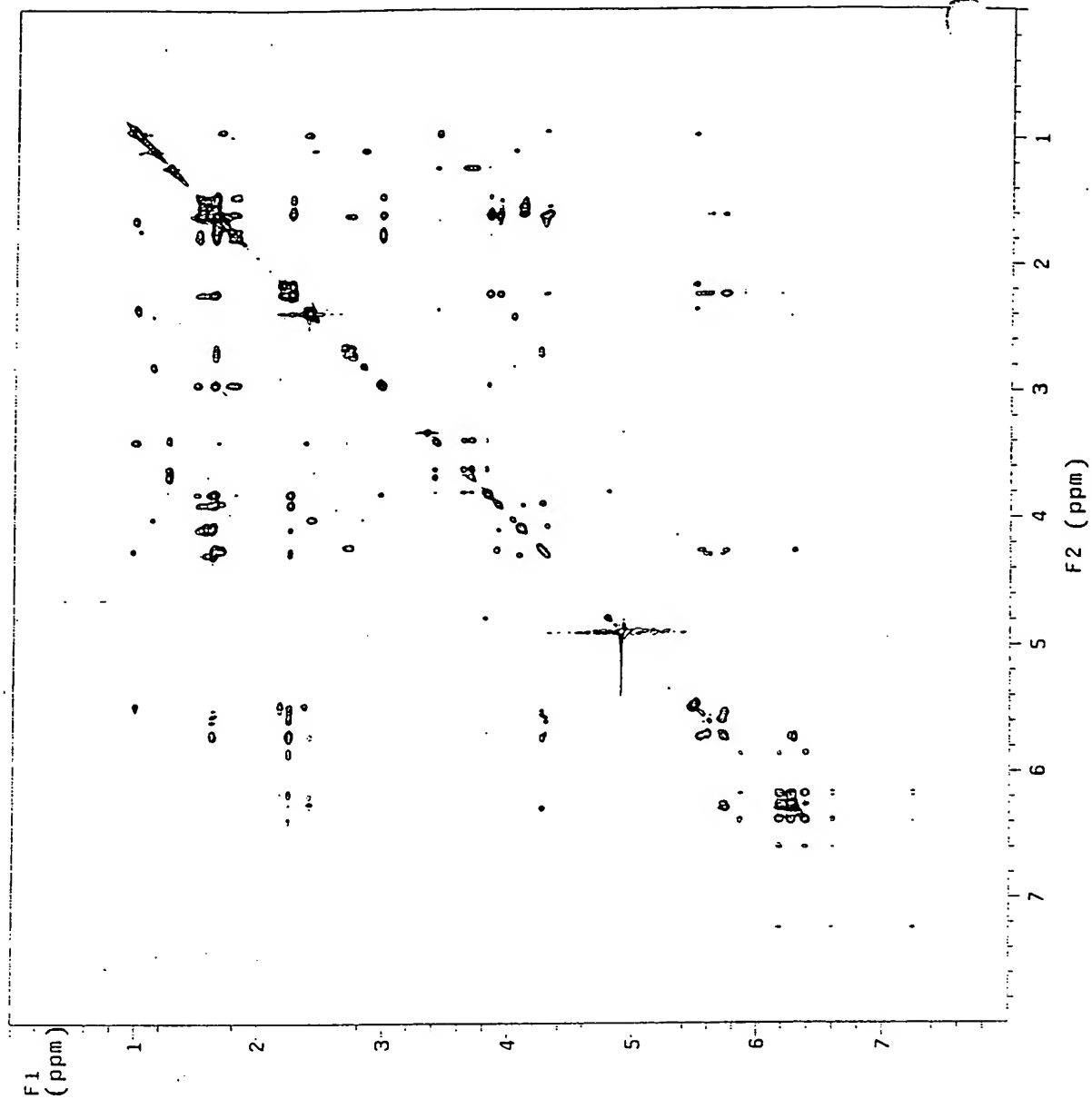


Figure 16

**Effect of Compound 2(a)  
on systemic Candidiasis *in vivo***

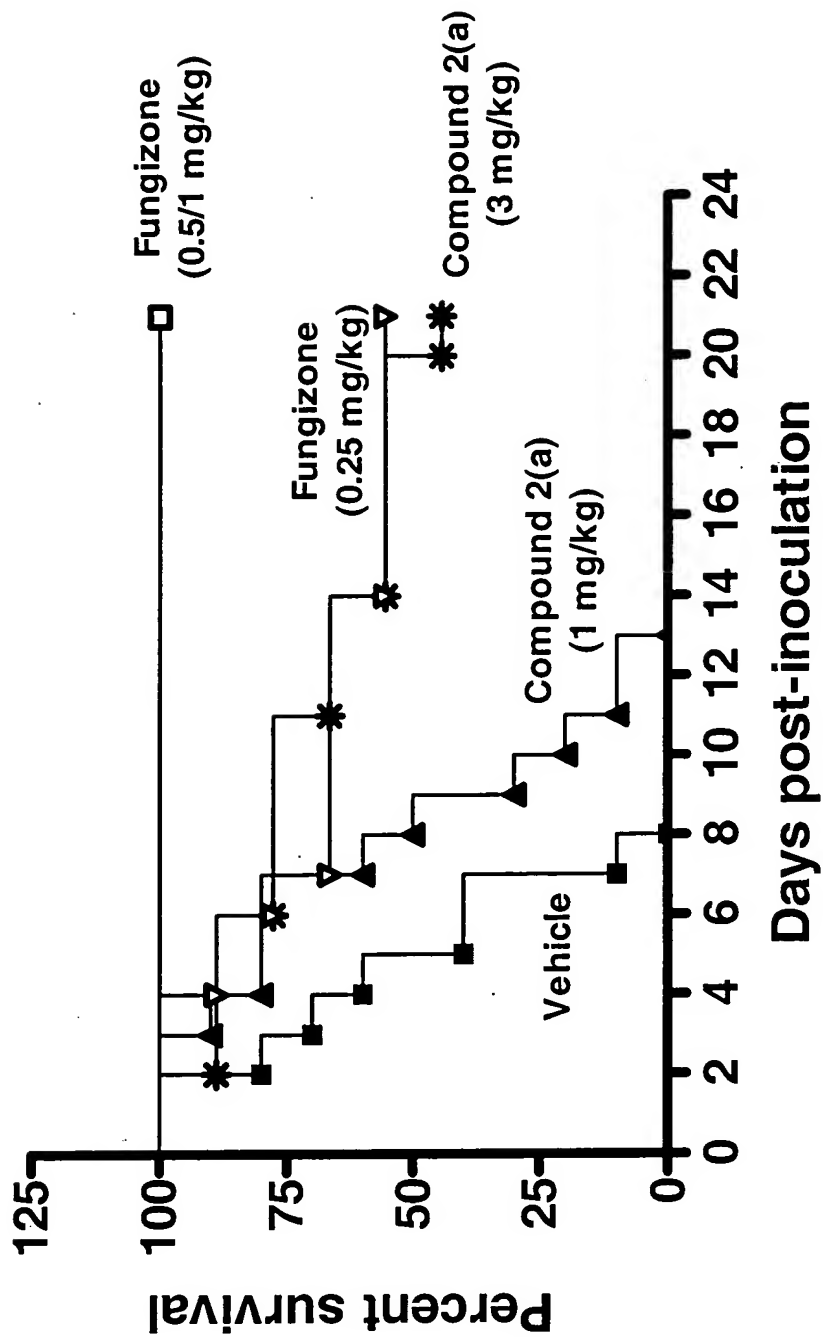


Figure 17a

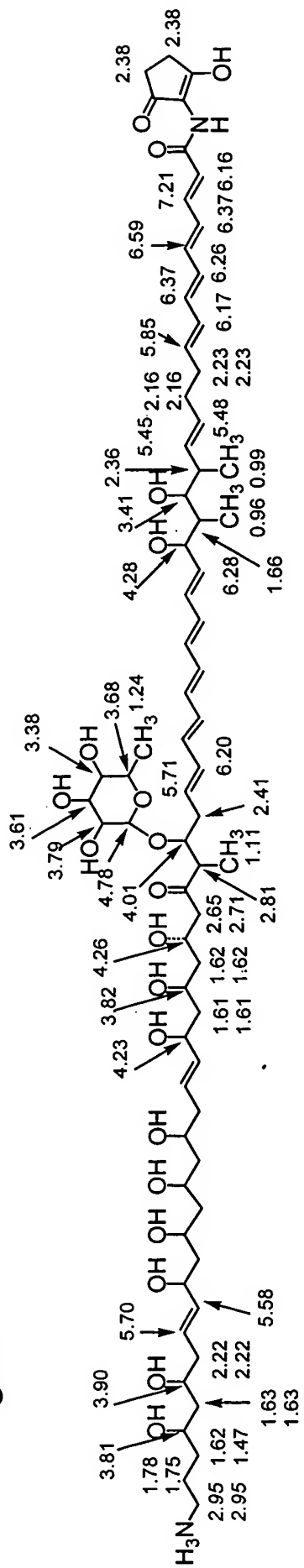


Figure 17b

